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ABSTRACT

A study of process operatives examined the developments in processing work in 20 organizations within the chemical and food and drink processing industries. Seven exploratory interviews were followed by 20 employer interviews. Technological innovations caused job losses and layoffs. Organizational responses adopted to meet increasing competitive pressures were drivers of change. The role of process operatives was broadly expanding beyond running processing equipment. The introduction of computer technology required less involvement in manual operative tasks and a greater understanding of the processes. Boundaries between process operations and engineering maintenance blurred. The removal of layers of management led to increased employee responsibilities. The main skills and abilities required of process operatives were basic, interpersonal, occupational specific, and personal. To ensure they recruited the right people, employers were using a greater variety of more sophisticated recruitment and selection techniques. Three types of skill gaps were identified: attitudes, personal skills, and technical skills. Developments in training were related to changes in technology and ways of working. Employers placed more emphasis on continuous learning and development and targeted training to fulfill actual needs. They were developing strategies to assist change through cultural change programs, modifications to recruitment and selection processes, and training and development programs. (Contains 21 references.) (YLB)

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Executive Summary

Introduction

The Department for Education and Employment commissioned the Institute for Employment Studies to undertake a programme of research entitled the Skills Review Programme. The aim is to explore the changing nature of skill requirements within key occupational groups in the UK. This report presents the findings of one of the last occupational studies: process operatives. The changes affecting this occupational group are examined within two processing industries: chemicals, and food and drink.

The fieldwork was primarily composed of two key stages: a preliminary stage of seven exploratory interviews, followed by a principal stage of 20 employer interviews. The fieldwork was undertaken between Autumn 1996 and Spring 1997.

Who are process operatives?

In examining the nature of the process operative workforce it was found that:

- Process operatives are essentially involved in the running of the processing equipment, either manually or through computerised process controls.
- The occupations are generally male dominated, although there are variations across and within the industries. Many of the chemical sites visited employed no female process operatives at all. In contrast, the secondary production of pharmaceuticals, and the food and drink industry, have relatively high female to male ratios, compared with the rest of the manufacturing industry. Changes in the nature of the job, and the move away from manual work, are leading to more opportunities for women.

- Part-time work is more prevalent in the food and drink industry than in chemicals, where it was virtually non-existent, undoubtedly reflecting the higher proportions of women employed. Temporary workers are being employed less for seasonal reasons as employers become more able to flat plan. Nevertheless, they are increasingly being used as a method of assessing someone on the job before a permanent contract is offered.

Drivers of change

The processing industries have experienced considerable changes in recent years:

- The 1970s, 1980s and early 1990s saw significant job losses and redundancies. Although this downward trend may be levelling off, further technological innovations are likely to lead to further reductions in operative staffing requirements.
- As competitive pressures, both national and international, are increasing, organisations are having to seek ways of increasing productivity and operating more efficiently. A variety of organisational responses have been adopted to meet these pressures, such as: the introduction of technology; establishment of new corporate cultures and approaches to business; organisational restructuring; and the implementation of new approaches to working.
- Many of these organisational responses are acting as drivers of change. As such, they are transforming the nature of processing work and the skills required to be a process operative.

Process operatives' skill requirements

The key focus of this study was the skills required of process operatives and how these are changing. Our research suggests that the role of process operatives is broadly expanding:

- The introduction of computer technology has meant that operatives are less involved in the manual operative tasks and are required to have a greater understanding of the processes. Many of the lower skilled manual operating jobs are disappearing.
- Boundaries between process operations and engineering maintenance are blurring. Process operatives are gradually conducting simple and routine engineering and maintenance tasks, particularly in the chemical industry. Multiskilling exercises and job rotation have been introduced.

- The removal of layers of management has led to the devolvement of responsibilities. Process operatives are becoming more involved in decisions, for example about the quality of products, hygiene, processes and packaging.
- Operatives are increasingly required to become more customer and business oriented.

Although not all process operatives require all the same skills to the same level, the main skills and abilities required of process operatives can be summarised under the following headings:

- **Basic skills**: literacy and numeracy
- **Other key skills**: IT skills, communication skills, team working and interpersonal skills
- **Occupation specific skills**: technical understanding, engineering skills, problem solving, analytical skills, maintaining standards, administration and management, and business awareness
- **Personal skills**: personal hygiene, flexibility, an ability and willingness to learn, maturity, a positive attitude to work, physical fitness and manual dexterity.

Indicators and measures of skill

In response to changes in the nature of processing work, employers within both the food and drink, and chemical industries, are modifying their recruitment processes and selection criteria. As the level and range of skills required to undertake the job has become more critical, employers are taking more steps to formalise the process and to ensure they recruit the right sorts of people. As such they are:

- **using a greater variety of more sophisticated recruitment and selection techniques**. These are involving an array of tests, interviews and work trials.
- **more closely specifying the minimum skill requirements**. These minimum indicators include: some academic and vocational qualifications, personal skills and practical and mechanical skills and experience.

However, there are differences by industry and occupational grade. These changes tend to be less marked and advanced for the least skilled processing jobs, and within the food and drink industry.

Skills gaps and recruitment difficulties

The study also examined the nature of any difficulties experienced by employers recruiting from the external labour market, and skills gaps within the existing workforce.

It was found that:

- As recruitment has tended to be low among many of the processing organisations, recruitment difficulties were not abundant or causing major problems.
- Most recruitment difficulties seemed to be experienced by the food and drink processing industries. These related to quite specific problems concerned with overriding the legacy of a poor traditional image.
- Many of the most common recruitment difficulties and skills gaps identified by respondents were closely linked to 'newer' skills, and hence associated with changes in the nature of process work.
- Some of the skills gaps were causing fairly significant problems, and employers were having to work quite hard to alleviate them.
- Three types of skills gaps were identified. These related to attitudes, and personal and technical skills.
- The main ways of managing these problems were through redundancy (*ie* removing unsuitable attitudes from the organisation), training, recruitment and selection, and cultural change programmes (which might use training and recruitment as a part).

Training operatives for the future

While there is often some distance between theory and practice in terms of what training employers hope for and espouse, and what is a reality, it appears that there have been some developments within training. Thus:

- Many processing employers have started to modify and develop training in response to changes in the nature of processing work, how it is undertaken and organised. Developments in training have thus related to changes in technology and ways of working. They have included things such as teamworking and group dynamics, decision making and problem solving, quality and customer awareness, new technological and IT skills, communication, and engineering maintenance and instrumentation.

- Some employers are questioning the sufficiency of initial training and placing more emphasis on continuous learning and development. This enables employees to more frequently update and refresh their processing skills, in the light of continual organisational changes.
- Employers are targeting training more closely to fulfil actual needs, instead of taking a blanket approach and applying all training to everyone as in the past.
- Employees themselves are increasingly being required to take an active interest in learning and to assume more responsibility for enhancing their own personal development.

Career opportunities

There are conflicting views over the impact of developments in training:

- Some believe that they have improved the internal development opportunities for process workers. This is because advancement and progression are believed to depend more on individual desire and aptitude.
- Others feel that the combined effects of multiskilling, streamlining, flattening job hierarchies and redundancy are working to reduce both the number and range of posts, and hence development opportunities.

Concluding comments

While the nature of processing work is changing and will undoubtedly follow similar trends in the future, this change has been variable from one organisation to another. Different processing organisations tend to be at various stages of change. Employers are encountering a number of challenges when reforming their organisational practices, structures and ways of working. These are inhibiting the desired changes in processing work. They relate to:

- the existence of skills gaps and recruitment difficulties
- the extent of technological advancement, and training and development
- the prevailing management 'team' and approach
- the internal organisational structure and balance of employee skills

- a lack of clarity in the organisational approach to change and management practices.

To override these problems in the future, employers feel they need to develop cultural change programmes, modify recruitment and selection processes, and introduce structured training and development programmes.

1. The Process Operatives Study

1.1 Introduction

The Department for Education and Employment commissioned the Institute for Employment Studies to undertake a programme of research entitled the Skills Review Programme. The aim is to explore the changing nature of skill requirements within key occupational groups in the UK. The Skills Review Programme involves conducting a series of eight occupational studies, covering the main Standard Occupational Classification (SOC) groups (with the exception of the routine and unskilled occupations). The key focus is on the skills required by employers and how these requirements are changing. Each study is, however, broader than this, exploring aspects of training and recruitment, as well as any issues which are particularly relevant to individual occupations.

This report presents the findings of one of the last occupational studies — process operatives. The changes affecting this occupational group are examined within two processing industries: chemicals, and food and drink.

1.2 Aims and objectives

Each occupational study addresses a number of common research questions:

- What is the nature of skill requirements for the occupation?
- Have the nature and level of skill requirements changed? Are the skill requirements increasing or decreasing? Are 'new' skills emerging and some 'older' skills disappearing?
- Which sorts of skill requirements are increasing and which are decreasing? Which are emerging and which are disappearing?

- Have the skill levels of the workforce changed to accommodate these changes? Or, have there been improvements in the supply of skills that have encouraged increasing skill requirements in jobs?
- Are the skill requirements for occupations likely to carry on increasing or decreasing? Do employers view change as a continuing trend?
- How can changes in skill requirements within occupations be measured?

The remainder of this chapter sets out the details of the research design adopted for the study of process workers.

1.3 Research methodology

The fieldwork was primarily comprised of two key stages: a preliminary stage of exploratory interviews, followed by a principal stage of employer interviews.[1]

1.3.1 Exploratory interviews

Before progressing with the main fieldwork for the study, some preparatory fieldwork was undertaken as a preliminary stage to the research project. This involved meeting with key contacts concerned with the skills and training of process workers, and holding seven exploratory interviews. These contacts primarily included:

- DfEE representatives, responsible for this occupational area in the chemical, and food and drink, processing industries

[1] The sampling procedure for this study should be borne in mind in interpreting this report, as this has undoubtedly affected the slant of the findings. It has been an intention of this study to capture the full extent and range of changes in the processing industry and their implications for processing skills. As the sample is quite small (*ie* only 20 employers), sampling has tended to focus on organisations at the forefront of change. Some of the more advanced practices documented, therefore, may be at odds with processing establishments more generally. This should be noted at the outset of this study. The concluding chapter gives more attention to the wider picture.

- representatives from a number of the Industry Training Organisations (ITO) and/or Lead Bodies (LB) dealing with the development of skills and training of this occupational group in these sectors. These representatives included organisations such as the Chemical Industries Association, the Association of the British Pharmaceutical Industry, the Off-shore Petroleum ITO, the Biscuit, Cake, Chocolate and Confectionery Alliance, the Dairy Industry Federation, and the Sea Fish Industry Authority.

These exploratory interviews were conducted to fulfil a number of objectives:

- As key actors within processing work, it was felt they may provide useful information to guide the principal part of the study, and would assist in the development of a preparatory framework for analysing employers' skill requirements. This in turn was intended to guide the course of the discussion about skills in the subsequent interviews with employers.
- To explore the contacts' involvement in the development of the occupational standards for process workers and related occupations, and to probe their views, not only about the standards and associated NVQs/SVQs but any broad trends or significant developments within the occupation.
- To inform them about the study and to gain their interest, general views and support.
- To identify what research they have, are aware of, or are planning to undertake about the occupational group.
- To increase our own understanding and familiarity with the occupational area, its key skills and relevant occupational standards.
- To help identify employer contacts to be interviewed.

The exploratory interviews were conducted in Autumn 1996. Information from these interviews was supplemented with research evidence collected from a literature review of the occupation. Both these sources of information were employed to develop the preparatory framework for looking at employers' skill requirements and the employers' interview discussion guide. It must be emphasised, however, that while the NVQ occupational standards were reviewed during the study, there was no attempt to test or validate the standards. The overall aim of the research was to explore employers' skill requirements in process work and how these have changed.

1.3.2 Employer interviews

The main stage of the research involved in-depth interviews with a number of employers in the food and drink, and chemical processing industries. A total of 20 employer interviews were conducted in this stage of the study. Ten of these were selected from the chemical sector, and ten from food and drink. Attempts were made as far as possible to ensure that interviews were conducted with the most appropriate respondent within each organisation. In most cases, this was the personnel or training manager, who had consulted with appropriate site and production managers to accumulate as much knowledge about the occupation as possible. Outlines of the interview were provided to interviewees prior to the interviews to assist them in any interview preparation. These managers were usually responsible for the recruitment and/or development of process workers, and had knowledge of the skills and utilisation of this occupational group in their respective organisations. Most interviews lasted about one and a half to two hours.

The discussion guide

A discussion guide was developed to provide the basic structure for each occupational study. This was piloted in the first few interviews. As with earlier occupational studies in the Skills Review Programme, the guide was found to be quite long. As a means of conserving time, this often meant less detailed information was collected on some of the characteristics of the occupation, including exact numbers and breakdowns of those employed, and their terms and conditions.

The discussion guide covered a number of areas. These included:

- background about the company
- the place of process operatives in the company
- changes affecting the company in general, and process operatives in particular
- the skills and abilities required of process workers, and how these were changing
- how these skills and abilities were identified and measured
- external recruitment
- internal movement, and training and development
- key issues for the future.

The majority of interviews were conducted between October 1996 and February 1997. All research participants were then invited to take part in a forum, where the research findings were presented and discussed. All suggestions and comments from the forum have been incorporated within this final report to clarify and enrich the findings.

The sample

Employers included in the study were selected to represent a wide range of employers within the food and drink, and chemical processing industries. As such, they were intended to encompass a broad cross-section of process operatives and approaches to processing work. Although the study was intended to be exploratory and indicative, rather than entirely representative, it is hoped the inclusion of a wide range of organisations has gone some way to capturing the diversity of employer experiences.

Selected organisations were intended to cover a full range of sectors within each of the food and drink, and chemical processing industries. The former thus included organisations from the drinks and distilling industry; biscuit, chocolate, cake and confectionery sector; dairies; and the processing of fish and fish products, as well as more general food products processing companies. The chemical processing sample covered a full spectrum of employers, from heavy chemical processing and manufacture, to pharmaceutical and medicinal chemical companies. Participating organisations varied greatly in size, and most employed between several hundred to several thousand employees. Although some of the organisations were multinational and were not all UK owned, they only discussed their British-based operations. Indeed, the findings relating to the utilisation, skills and organisation of process operatives apply entirely to experiences in Britain.

1.4 Structure of the report

The rest of this draft report is structured as follows:

- Chapter 2 provides some basic background information about the food and drink, and chemical processing industries, and the structure of employment. It goes on to explore various aspects of the culture and competitive strengths reported to characterise the organisations participating in this study.

- Chapter 3 explores employers' skill requirements and how these are changing.
- Chapter 4 looks at how employers recruit process workers and how they attempt to measure and assess skills.
- Chapter 5 reports the extent of recruitment difficulties and skills gaps.
- Chapter 6 examines the nature of training and development provided for process workers within the sample organisations contacted within this study.
- Finally, Chapter 7 looks at some future concerns for this occupational group and draws some conclusions.

2. The Chemical and Food and Drink Industries, and Process Operatives

2.1 Introduction

This chapter sets the background for our examination of employers' skill requirements and, in particular, the ways in which these are changing. The first section provides a summary of the characteristics of the process operative workforce and briefly outlines some overall trends in the organisations participating in this study. In this discussion, the key differences between the two industries surveyed are identified. Later sections explore the nature and impact of changes affecting employers in the industries surveyed. There are a number of broad themes which were common to most organisations, regardless of the sector of the market in which they operate. These are detailed below and include increasing competitive pressures, technological change, new corporate cultures, management practices and an emphasis on flexibility.

2.2 What are process operatives?

In studying process operatives as an occupational group, first it is necessary to define the occupation and generally describe the tasks in which process operatives may be involved. Our examination of process workers has broadly explored the varying characteristics of this occupational group within the chemical, food and drink sectors. Within chemicals, the organisations participating in this study ranged from heavy chemical processing and manufacture, to pharmaceuticals. For the food and drink industry, the research encompassed biscuit, chocolate and confectionery; drinks; distilling; dairies; bakeries; and fish processing, as well as the processing of more general food products.

2.2.1 Process operatives in the chemical industry

Process operatives in the chemical industry are essentially involved in the running of the processing equipment. They work in either continuous 24 hour or batch production:

- Continuous 24 hour sites are likely to produce heavy, bulk or primary chemicals at large, external and free standing processing plants.
- Batch production sites are often smaller, comprise internally housed plants, and commonly produce smaller volume and greater value added secondary products.

A large chemical site is made up of a number of plants which are often interdependent. Each of these plants may be further divided into a number of workstations. Process operatives may either conduct manual tasks on the plant, operating plant machinery directly, or operate the plant via computerised process controls, located within a separate control unit. Typical tasks of process operatives within the chemicals sector include:

- getting the production equipment ready
- starting up the equipment
- ascertaining, weighing and measuring the necessary ingredients or raw materials
- loading or regulating the flow of the ingredients
- monitoring the process
- adjusting controls
- removing or regulating discharge of material on completion of processing
- maintaining an operational log
- packing off and loading products for distribution.

2.2.2 Process operatives in the food and drink industry

Food and drink process operatives may be involved in 'anything on the factory floor' on a processing site. As with the chemical industry, this may involve operating within batch or continuous modes of production. Our research indicated that process operatives were most commonly employed as semi-skilled operators. Across the food and drink processing industry, the functions are broadly similar. Thus, the role generally involves

setting, monitoring or operating machinery in areas such as: receiving ingredients into the factory; mixing ingredients; preparation processing; brewing; baking; roasting; drying; flavouring; preparing the finished product; and packaging wrapped products for distribution. Processes are generally undertaken on lines. The start of the line usually involves receiving ingredients and making the product; and the end of the line, packaging the product for distribution.

Clearly, specific tasks vary between the different sectors of the food and drink industry, and may require a slightly different emphasis on skills and/or processing knowledge. For example, within the dairy sector, processing includes the separation and modularisation of milk. The knowledge and expertise required for this is obviously quite different to that needed in other areas of food and drink processing. For instance, in some aspects of the drinks processing sector, there is a requirement for quite specialist knowledge of brewing and/or distilling processes. The range of knowledge and expertise may also vary within industries. Fish processing is divided into primary and secondary types of production. The knowledge, skills and expertise varies between processes on the primary side, in areas such as cutting and filleting the fish, and those on the secondary side, involving, for example, smoking, battering, freezing and frying.

Both within the food and drink and the chemical industry, there have been significant changes in the roles of process operatives in recent years. Job boundaries have become blurred. These changes and their implications are discussed in detail in later sections of this chapter, and in Chapter 3. Key trends have involved:

- a move towards process operatives taking on multiple tasks rather than operating a single piece of equipment
- multiskilling, where process operatives are taking on other broader areas of work. This may include elements of engineering maintenance and instrumentation, quality assurance and supervisory roles; and
- changing technology, resulting in the process operative's job becoming more conceptual than manually based.

2.3 Characteristics of the processing workforce

An examination of the varying characteristics of process workers provides an understanding of the general nature and composition

of the occupational group. It also serves as a basis for the examination of changes in broad skill requirements. The main characteristics considered in the following section include: variations in gender; the proportion of part-time workers; the use of temporary workers; age; and the degree of staff turnover.

2.3.1 Gender

Process workers in the two industries surveyed are male dominated, with over two-thirds (69 per cent) nationally being male (*Labour Force Survey*, Winter, 1995/96). However, this figure masks marked variations both within and between the industries.

The chemical processing industry

Labour Force Survey data shows that over 80 per cent of process operatives working in chemicals are men (*Labour Force Survey*, Winter, 1995/96). Indeed, a number of the heavy chemical sites visited for this study employed no female process operatives at all. The reason given by several respondents for this was related to the fact that historically, the job was believed to be too physical for women. In addition, given that male engineers have been a significant source of labour within process operations, this has added to the preponderance of men within the occupation. Now, due largely to such deep traditions, the key barrier to the employment of women tends to be the prevailing culture of the occupation, as the following responses illustrate:

> *'A process operator is seen as a man's job; women have a hard time. It is not a physically demanding job; there is no reason at all why they cannot do it; it's a cultural thing.'*

> *'There are very few physically demanding tasks now, as most are computer controlled.'*

However, not all areas of the chemical processing industry are male dominated. Indeed, within the secondary production of pharmaceuticals, for instance, a greater proportion of women are employed than in the production of bulk and heavy chemical products.

> *'In bulk manufacture, there are no females. Within secondary production, packing is female dominated. In production, the ratio is 50:50.'*

There are undoubtedly a variety of reasons as to why there are higher proportions of women in these processing areas (such as pharmaceuticals). Some respondents in the study believed it was largely due to the lower levels of skill required, the light nature of much of the work, and the effects of discontinuous shift patterns which often led to more variable hours and levels of pay. One respondent in the pharmaceuticals sector, for instance, who reported that four-fifths of their workforce were female, believed the predominance of women was due to the fact that many of them were not the primary 'bread winner' and were thought to 'just come to do the job'. The salary was perceived more as 'pin money'. In addition, it was believed that women who assumed primary responsibility for domestic tasks were more receptive to working variable hours, offered through discontinuous shift patterns, which they could fit more easily around their home lives. These factors appeared to be consistent with much of the literature, which broadly has shown that women are more likely to work in less skilled occupations and low status work, undertaking fewer hours and receiving lower and/or more variable pay (*eg* Dickens, 1994; Liff, 1995).

Nevertheless, there are signs that these trends are beginning to change. Changing recruitment practices, such as recruiting school leavers onto Modern Apprenticeship schemes, are beginning to encourage and attract female recruits. One pharmaceutical employer noted that, for the first time, some women had applied, and met the standards, to move across to traditionally male areas such as bulk active chemical production. However, it is likely that these changes will remain slow and incremental, as traditions often take some time to overcome.

The food and drink industry

A significantly higher proportion of women are employed overall as process operatives in food and drink compared to the chemical industry. This is undoubtedly because much of the industry reflects female dominated areas of employment more generally in terms of, for instance, pay, skill levels, shift patterns, hours worked and so on. The interview data suggested that traditional perceptions of what was so called 'male' and 'female' work, could then sometimes serve to reinforce practices. This was evident, for instance, in the more female dominated parts of secondary fish processing, as a couple of respondents noted:

'The traditional view is that women have smaller hands so they have more manual dexterity.'

'There is a view that men cannot put ten fish fingers in a box because they have got big hands. Why then are most jewellers men?'

However, there were areas of the food and drink industry where there were fewer women. These primarily included the brewing, distilling, primary fish processing and dairy sectors.

As with the more male dominated areas of chemical process operations, the higher proportion of men appeared to be largely historical. Traditionally, the emphasis in some of these areas on heavy and physical work had often tended to exclude women. For instance, within the dairies, there was an emphasis in the past on manual work, such as lifting crates. Long running and deep rooted traditions were then often difficult to override. Within fish processing, for instance, respondents identified the existence of very traditional attitudes as to what sorts of work are perceived as male or female. Although in primary fish processing the job involves some heavy handling work, the predominance of men is largely seen to be a reflection of a traditional dockside culture.

It is possible that changes in the nature of the work may create more opportunities for both women and men to enter new areas of employment and to override any traditions of gender segregation. This is already evident in some areas. The dairy industry sector is now moving towards a 50:50 male:female ratio. This is occurring in association with the creation of production technician positions which involve less manual work. However, at the current time, the rate and extent of change across the food and drink industry as a whole is likely to be quite gradual, and traditional patterns of employment will tend to persist.

2.3.2 Part-time work

The *Labour Force Survey* shows that 85 per cent of process operatives work full time (*Labour Force Survey*, Winter, 1995/96), with the proportion rising to virtually 100 per cent in the chemical industries. However, in food and drink, there are relatively high proportions of part-time workers compared with manufacturing occupations overall. Within the bakery and confectionery sectors, for instance, part-time workers account for as much as

63 per cent of the workforce nationally (*IRS Employment Trends*, 1994). These data seem to show alignment with the gender distribution patterns (highlighted earlier). This pattern is still predominant, despite the fact that there has been a slight decline in the proportion of female, part-time employees in the food industry in recent years (*IRS Employment Trends*, 1994). One of the reasons for the higher proportion of women in part-time work, suggested by the data in this study, is the ability and willingness of women to work more flexibly. For instance, one of the participant employers reported that women work half (four hour) shifts to fit in with domestic responsibilities and other jobs.

2.3.3 The use of temporary workers

Historically, the food industry has employed temporary workers because of seasonal factors, such as harvesting certain foods or to meet busier periods at certain times of the year, such as Christmas. Similarly, within pharmaceuticals, the increase in demand for certain medicines at particular times of the year, such as cough mixture in winter, led to a need for seasonal workers. However, as markets become better predicted and production better planned, seasonal variations in work are being overcome. The seasonal use of temporary workers has been reduced in food and drink processing, as the shelf life of goods has increased and factories have become better able to flat plan.

Seasonal fluctuations in employment and business activity are not the only reason for using temporary workers in the food and drink, and chemical industries. Our research shows that some organisations use temporary workers as part of the recruitment process. Temporary employment is a way of assessing someone on the job, before a permanent contract is offered. In addition, temporary workers may be employed to cover busier times associated with the development and promotion of a new product, which may be thought to have an uncertain or limited shelf life. This was particularly common in some sectors of the food and drink industry, where products were being prepared in association with a particular event such as the Olympics, the D-Day celebrations, the football World Cup and so on. It also occurs where the new product had not been fully market tested, and hence it was not known whether it would be a success.

2.3.4 Age

The age profile of the process operative workforce is wide ranging, with employees typically aged between their early 20s and mid-40s (*Labour Force Survey*, Winter, 1995/96). Broadly, the chemical industry workforce has an older age profile than that of those employed in the food and drink industry. There were several examples within the chemical organisations visited of stable ageing workforces. The data from this study suggests that the older chemical workforce is a reflection of the responsibilities and risks that much of the most skilled work in the industry involves. As such, many of the chemical sites visited seemed to require a certain level of maturity from their process operatives.

2.3.5 Staff turnover

Staff turnover varied across and within the two industries. Many chemical processing sites tended to have stable workforces. This was particularly the case among the heavy chemical processing sites, where it was reported by some respondents that staff generally 'could not afford to leave'. This was largely due to the favourable pay and conditions, and the fact that there was generally no direct transferability of skills. In the food and drink industry, the situation appeared more variable. Within some organisations, the workforce was divided between a core of time-served employees and a number of 'short timers' who only worked three months or so. There were also examples of locally-based employers with generations of families working in the same factories. In other areas, high turnover had been a bigger problem. In fish processing, in particular, this had resulted in employees frequently moving between local fish companies. However, one employer had reduced turnover from 20 per cent to three per cent as a result of technology, investment in training, and employees' insecurities over the external economy.

2.4 Pay and conditions of employment

Although this study did not explore in extensive detail the pay, terms and conditions offered to process operatives, it has been interesting to examine such data where available. This information has provided a further insight into the varying experiences of this occupational group across different processing industries and sectors. As such, it has added another source of contextual information to this study of skill requirements.

2.4.1 Pay

An examination of national pay data reveals some considerable variation between the food and drink, and chemical industries, with average levels being higher in the latter. The average gross weekly pay nationally for process operatives in chemical, gas and petroleum is £383.50. This compares with £275.20 for those employed in the food, drink and tobacco industries (*New Earnings Survey*, April 1996). Considering earlier employment patterns and distributions, this is likely to reflect the higher proportion of female part-time workers employed in food and drink processing, who are renowned generally for receiving lower pay than men, on average (*eg* Dickens, 1994; Liff, 1995).

These general observations were supported by the research data collected for this study. Participant employers in the food and drink sector paid significantly less than those in chemicals. In the chemical sites visited, process operatives were not only paid higher salaries, ranging from £10,000 per annum to £20,000, but also received shift allowances on top. These were often generous and seen as an attraction to work in the industry. The pay of some process operatives also had an additional element related to performance.

Nevertheless, there were some notable exceptions in the food and drink processing industry, namely within drink distilling and dairies. One organisation in this sector had recently moved away from a situation where employees had to work large amounts of overtime in order to take home a decent wage. They were now paying a better basic salary for fewer hours. A pension scheme had been introduced and salaries were being paid directly into bank accounts. This was part of a programme introduced to try to raise the esteem of process workers.

2.5 Trends in employment

In this section we briefly consider the size, and hence significance, of the occupation in the labour force. It provides a short summary of the overall levels of employment and recent trends, both nationally and within the organisations visited. This again has served to provide a useful background to the study and has assisted in the overall understanding of how the skill requirements of process operatives are changing.

2.5.1 Overall levels of employment

Approximately a quarter of a million people in Great Britain work in process operative occupations in the chemicals, and food and drink sectors. This constitutes 0.9 per cent of the total employed population (*Labour Force Survey*, Winter, 1995/96). The numbers employed have been relatively stable in recent years, with a slight increase between 1992 and 1995 (*Labour Force Survey*).

Quite major job losses occurred in the food, drink and chemical industries during the 1970s, 1980s and early 1990s. Indeed, many of our respondents reported significant job losses and redundancies during this time. The findings suggest that such losses were largely due to increases in competition, creating a need to cut operating costs, and the effects of the economic recession, as well as the introduction of new technological automation. Most of the reduction in employment has arisen out of delayering, restructuring and refocusing of the business, as well as the sub-contracting of staff in areas such as engineering, IT, catering, security and cleaning functions. Job losses are reported to have been across the board within the organisations visited, including some in process operations. New technologies have also led to a reduction in production line jobs, particularly as machines become more sophisticated and are able to produce more at a faster rate (*IRS Employment Trends*, 1994). The petro-chemical industry, for instance, has already introduced some unmanned units. As numbers reduce, the few that are left are more likely to be working across a broader range of functions and, as such, are becoming more broadly skilled.

Some of the companies visited for this study did foresee a continuous decline in jobs over the next few years, in association with further organisational and technological innovations and change. However, it was thought likely that the rate of decline would be at a slower pace. This is supported by more recent labour force employment trends, referred to above. In some cases, the decreases already appear to have bottomed out:

> *'We have gone through a process of re-engineering to become leaner, to the point of being anorexic. We are now trying to recruit in order to meet demand.'*

> *'We have reduced staff over recent years but are now operating at a base level and are unlikely to shed any more jobs.'*

It is difficult to conclude at this stage, whether this stabilising process is likely to be a long-term trend or short-term fluctuation in employment levels.

2.6 The nature and impact of change

Both the chemical, and food and drink processing sectors have experienced considerable change in recent years. The pace and impact of change continues to play an important role, influencing the nature of the industry and skills required. The remaining section within this chapter identifies the key changes affecting the organisations participating in the study.

2.6.1 Competitive pressures

During the 1980s and 1990s, British employers have come under increasing pressure to change their approaches to business and management (Sisson, 1994). The liberalisation of product markets, and changes in world trading patterns, have tended to increase both the level and extent of national and international competition. The food and drink, and chemical processing industries, have been no exception. Performance and profitability have been affected by increased pressures on costs; uncertainty through the effects of the recent recession on demand; and increasing legislation on customer protection, hygiene and health and safety matters (*IRS Employment Trends*, 1994; Griffiths, 1994). In the food industry, in particular, price wars between retailers have put pressure on food suppliers to contain prices, as their profit margins are increasingly squeezed.

As a result of these developments, many organisations have been forced to seek ways of increasing productivity and operating more effectively and efficiently. Competitive pressures have resulted in a need to reduce costs across the board, especially on wastage, handover, changeover and downtimes in process operations. They have also given rise to the need to get an improved finished product, better presented with better ingredients, which in turn has led to the requirement for more highly skilled operatives.

> *'The drive to cut costs has led us to buy the most expensive raw materials and work capital to death.'*

With an increase in competition internationally, there has also been a growing trend to uproot less profitable production in one country, and to set up in another, where labour costs may be cheaper.

A number of organisational responses have been adopted across the food and drink, and chemical industries, albeit to varying degrees and intensities. These have included:

- introducing new technology to reduce labour costs in some areas, and to increase efficiency and productivity
- implementing new ways of working and approaches to business that enhance business success and profitability, and enable organisations to be more dynamic and respond to the needs of the market
- establishing new corporate cultures, enhancing 'total quality' of goods and services, and fostering values such as greater customer orientation, customer sovereignty and customer care
- restructuring the organisation and implementing major redundancy and streamlining programmes, particularly in labour intensive areas such as administration and middle management, to produce flatter and leaner structures
- implementing more flexible forms of working, such as multiskilling, which are believed to optimise the use of labour and enhance productivity levels
- implementing more innovative employment practices, associated with 'Human Resource Management' which emphasise employee commitment, empowerment, higher individual performance, flexibility and task interchangeability, teamwork, and training and development.

The following sections examine some of these responses in more detail.

2.6.2 Technology

New technology, in particular the introduction of computer controlled processes, has made inroads into production methods in recent years (*IRS Employment Trends*, 1994). The nature of processing is gradually becoming more and more complex as a result of technological advances. This investment in new technology has largely been driven by the larger companies who have the resources to become automated and update their processes.

Arguably, the main technologically-driven change to impact upon process operatives in the past 30 years has been a change from manually-based work to conceptual work, leading to job losses. There has been an increase in processing operations, where machines are run directly by machines, rather than process operatives. As a result, fewer people have been required to work on the shop floor and undertake as much manual processing work. Production line jobs have become consumed with lighter duties involving watching for problems, checking that instruments are working correctly and adjusting controls where necessary. Technological changes have had a slightly different emphasis in different processing industries.

The chemical processing industry

The greatest technological advances in the chemical industry have been in process control. Rather than running the machines manually, operatives are required to transmit instructions through a computer programme. Other technological advances include the use of advanced catalysts which process operatives have to understand and use. These technological developments, although rather slow and gradual, have tended to be fairly continuous for some years now. Many respondents feel they will continue to transform the nature of processing work. Indeed, there has been considerable investment in new technology in recent years within most of the companies we visited.

The food and drink industry

In the food industry, whole production lines and processes have become integrated and are now increasingly controlled by computers. Computers are generally pre-programmed to run the machines. Process operatives do not usually programme com-puters but learn the commands to operate the computer. This has removed much of the physical work and replaced it with more 'thinking'. For example, where manual weighing processes have been automated, this has not only increased the speed and accuracy of the process, but allowed operatives more time to think about the job, how to make improvements and how to solve problems. Much of the physical work has also been lost within the dairy industry, where more processing, bottle filling and cleaning activities are now done by machine. This has resulted in dramatic reductions in the number of process operatives required to run the machines. However, some

processes, such as packaging, are less able to be automated due to varied sizes, contents and different types of packing materials.

Again, as with the chemical industry, the introduction of technology is not a new phenomenon and many developments have tended to be incremental rather than revolutionary. As such, they have been taking place for some time. However, whilst some employers have heavily invested in new technology in recent years, take up has not been uniform across the industry. For instance, one employer stated that prior to the recent innovations, the technology used had not changed since the 1960s. In addition, it seems that the technology used is often designed for a specific process and not bought off the shelf. As such, technological developments tend to be protected by individual companies as closely guarded secrets.

2.6.3 New corporate cultures

A common theme among many of the employers was that the culture of their organisation was changing. In some cases this change was unintentional and had simply been brought about as a result of staff turnover and other broad management and structural changes. However, quite frequently, changes in corporate cultures often seemed to be planned and be a direct response to the rise in competitive pressures. As such, many organisations had consciously embarked on bringing about some form of cultural change through new practices and a series of company visions, values, and mission statements. In this light, cultural change was seen as a direct means of making improvements, and increasing profitability and organisational performance.

> *'We are described as a highly individual company with a highly creative culture. There is a lot of autonomy to make changes. In fact there is no resistance to process operatives making changes if it benefits the bottom line.'*

> *'There was a rule by fear mentality but we're going through a massive cultural change which is being driven by the board. This will entail a more strategic role for HR.'*

However, the process of changing an organisational culture did not always seem to result immediately in positive benefits. In some cases, the change process associated with developing the new cultures was creating uncertainties and insecurity among

the workforce. This was especially the case where some of these changes were still very new, and also where the traditional cultures being undermined were preferred.

> *'We are moving away from a culture of protectionism to breaking down barriers, but we still have a long way to go.'*

> *'The culture is fairly paternalistic, reflecting the traditional culture of the manufacturing sector, but the culture is changing; jobs are still secure but are likely to become less so.'*

Although the precise nature of these cultural changes have varied from one organisation to another both across and within industries, there have been some common elements. These have included an increased emphasis on quality and customer focus.

Quality

Quality was an increasingly important theme among the employers visited. The increased productivity and volumes of output resulting from the introduction of new technologies means that problems are potentially huge if standards are not maintained. This is enforced by a growing emphasis on quality by customers and through legislation relating, for example, to hygiene, health and safety. As a result, there is a shift towards process operatives taking on a greater role in monitoring the quality of products and making quality decisions themselves. The introduction of quality management systems, such as BS5750 and ISO9000, which emphasise continuous improvement have been an important feature of this quality drive.

Customer focus

A focus on customer needs, and understanding the customer market, both internal and external, was mentioned by a number of respondents. This is undoubtedly a direct result of competition and the fact that employers are trying to differentiate themselves in some way from their competitors. For staff, a commitment to the business, an understanding of what their strengths are, what their customers want, and how and why they must maintain customer satisfaction were all seen as critical by many of the organisations contacted.

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2.6.4 Sources of business strength

The kinds of competitive strengths mentioned by employers, particularly those in the chemicals sector, included: working in an established, stable niche and having a large proportion of the market for products, with few competitor companies locally. A specialised knowledge, the expertise and a technological base to do what others cannot do were also reported. Product brands and a reputation built up over the years were mentioned by a number of food employers as the key to success. For the chemical industry, environmental performance and reputation locally were pivotal. Geographic position and easy access to the raw materials also presented an important advantage.

2.6.5 Mergers and acquisitions

The majority of the participating organisations had been involved in mergers and acquisitions in recent years. This was often done to strengthen the competitive position of the organisation and to increase its market share. Mergers and acquisitions have been fairly common in the food sector in particular, which is now dominated by a few large conglomerates. Multinational companies have increased their role in the European food sector which was traditionally dominated by small and medium sized national companies (*IRS Employment Trends*, 1994). Such mergers and acquisitions have led to organisations adapting their practices and general approaches to business.

2.6.6 Product portfolios

Many of the organisations visited were also adjusting their product portfolios as a means of enhancing their profitability. This was either done by focusing on particular areas of expertise or adapting to the needs of the market. Some employers were reducing their product range in order to focus on their core products, or those they were better at producing than their competitors. A few of the large chemical organisations were moving towards a situation where each of their sites was specialising in a particular range of products and production functions. Similarly, some food manufacturers were beginning to devise innovative varieties of foods, to match changing eating habits, tastes, storage and cooking methods (Griffiths, 1994). Short runs of products are also becoming increasingly common

in some processing areas. With this continual introduction of new products onto the market place, this means that processing functions and process operatives are unable to stand still.

2.6.7 Management practices

In line with these competitive pressures and mirroring the introduction of the new technologies, respondents talked about the changes they were making to their management strategies. These included delayering exercises, restructuring, a pushing of responsibility downwards through empowerment, and team building. Important restructuring exercises had taken place and employers were increasingly looking towards new ideas and forms of people management and production techniques, including Human Resources Management (HRM), Total Quality Management (TQM) and multiskilling (*IRS Employment Trends*, 1994). These had resulted in changes in working practices affecting all employees right down to the shop floor. All the following changes have implications for the responsibilities of, and pressures on, those staff remaining, and the skills and abilities expected of them.

Restructuring, delayering and downsizing

Delayering was a common theme among participant employers. Typically, on the shop floor, some of the supervisory and 'charge-hand' layers had been taken out. In many areas, supervisors had been pulled up more to professional involvement, creating space for process operatives to develop. One chemical employer had restructured their operation vertically on a business basis, so that section managers now respond to business managers. This was reported to have made them more streamlined and their decision-making processes more effective. Where flattened structures had been associated with devolving responsibilities and empowerment, this was reported to be making staff more autonomous. Some employers envisaged that, in the long term, the supervisory role would disappear completely.

Teamworking

An emphasis on teamwork, and moves to cellular working, were also common features. As such, there was a move towards

process operatives working on the whole job rather than different tasks or components of a job. In addition, the whole team was becoming responsible for a particular process. This included: collecting the raw materials; setting up, running and shutting down the machine; managing the output; and planning and continuously improving the production process. Self-managed teams were also beginning to become evident. These teams assumed responsibility for staff management as well as production issues, but tended still to be at a fairly early stage of development.

Innovative employment practices

New, arguably more innovative employment practices, were being introduced. New training initiatives were becoming evident, such as competency frameworks, and skills and training matrices, to ensure a more structured means of developing people. These were also being used in some instances to guide recruitment and selection. A broader range of recruitment methods were also being employed, and this included more sophisticated testing procedures and clearly specified criteria. In some areas, pay enhancements and performance-related pay were being used as incentives to enhance individual productivity and development.

Employers are becoming more people oriented; many respondents talked about the empowerment of process operatives, teamworking and upskilling. There is an increasing recognition that the difference in products does not come from the technology or the ingredients used, but what is done with the people (Griffiths, 1994).

The historic view that process operatives should leave their 'brains on the gate' when they come to work is disappearing. One employer described the change as a shift away from employees 'having a job' to 'doing a job'. Typical responses were:

> *'We are an IiP employer, and as a site we do face up to our responsibilities in terms of how we manage people.'*

However, in reality many employers were driven by financial pressures and were very much profit and result oriented.

> *'People are the key, but products, technologies, takeovers and sales are more of the focus — it's a fast moving business.'*

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The food industry, in particular, was described as aggressive in its attitude, with companies operating under tight margins. The industry was described as having a lean culture, with a huge focus on eliminating waste. Money can literally be thrown down the drain if things go wrong. Nevertheless, driving up skills, empowerment and making more effective use of staff, were increasingly seen as the key to success.

> *'Our people are our principal asset: we've got very good people, the technology others have. It is not that we had worse people years ago, it's just that we didn't make effective use of them. They don't come through the gate and leave their brains on the fence anymore.'*

Flexibility

Many organisations have also been implementing more flexible forms of working, such as multiskilling. Essentially these have required process workers to be more flexible about the sorts of work they undertake, compared to the past, and to be prepared to take on new and broader duties and responsibilities, if required. This has often involved process workers moving into some areas of neighbouring occupations such as engineers, quality inspectors and chemists. However, this move has tended to be restricted to the least skilled and low level tasks of these occupations, and as a result generally only served to 'blur the edges' between the occupations. In other cases, multiskilling may be taken to mean working on multiple machines, or working over a broader range of the production cycle in a number of work-stations or stages, rather than just one.

Multiskilling and flexibility have not been universal, but rather there have tended to be variations upon a theme across processing sites. Thus, elements of multiskilling are present to varying degrees across the industries. One example is outlined below:

> *'In the past, process operatives had highly specific jobs. We now have a multiskilled workforce. The change was made about three years ago. Craftsmen have been moved to work within operatives' teams so that teams can handle abnormal situations without having to call the experts in. Process operatives have been trained in basic engineering skills. There has been an enormous amount of training in areas such as handling tools, fitting and basic instrumentation. Process operatives will now do tasks such as pipe fitting and pump removal. Some tasks still have to remain with the craftsmen for regulatory reasons.'*

The range of potential approaches to increasing flexibility as outlined by some respondents are presented in the following typology. However, this is not intended to provide a precise classification, as employers often employ elements of several different approaches.

- **Multiple skilling** — where all process operatives are trained in all areas of new skill to a similar level, to become 'all singing, all dancing' operatives. A problem found with this approach has been the retention of skills, as certain areas of skill are rarely used.
- **Flexible skilling** — process operatives operate the plant or piece of machinery as their core function, but are also trained in an extended area. This extended training area may cover basic engineering tasks or the operation of machinery up or down the line from the principal job. It will also be focused on tasks the individual will be carrying out on a regular basis. Different operatives may pick up different or more skills than others, depending on their wishes and abilities. Flexible skilling allows for the rotation of operating tasks and the carrying out of engineering tasks, as and when required.
- **Multi-functional teams** — leaderless teams, whereby not all process operators are trained up in all skills; rather, the skills should be spread within the teams. Certain individuals with particular aptitudes should be trained in certain specialisms. All the skills required to operate the plant or line exist within the team not one individual, so that it is an 'all singing all dancing team'.

In association with moves towards flexibility and multiskilling, there has broadly been an erosion of the traditional job demarcations between process operatives, and occupations such as electricians, welders, fabricators and instrumentation operators. This has been taking place slowly over the past 20 to 30 years or so. Consequently, the majority of employers have been blurring the edges between process operations, engineering and on-line analysis. As such, process operatives may now be involved directly in routine machine servicing and maintenance, taking temperatures, measuring pressures and taking readings on line, and feeding into statistical control areas.

There were some differences between industries. In the food and drink industry there was more evidence of multiskilling in terms of working on more than one type of machine or product. Thus, one respondent had reduced the number of processing

lines from five, each dedicated to one product, to one which could make all of the five products. While some operatives in this sector did also take on some general engineering maintenance work and fault finding, this move tended to be less prevalent than in the chemical sector.

2.7 Summary

This chapter has attempted to set the context for our examination of employers' skill requirements and the ways in which these are changing. We began by providing a definition of the occupations, with a discussion of the nature of the process operative workforce. Process operatives are essentially involved in the running of the processing equipment, either manually or through computerised process controls.

The occupations are generally male dominated, although there are variations across and within the industries. Many of the chemical sites visited employed no female process operatives at all. In contrast, the secondary production of pharmaceuticals, and the food and drink industry, have relatively high female to male ratios compared with manufacturing as a whole. Our interview data suggested that traditional perceptions of what was so-called 'male' and 'female' work, could serve to reinforce practices. However, changes in the nature of the job, and the move away from manual work, is leading to more opportunities for women.

Part-time work is more prevalent in the food and drink industry than in chemicals, where it was virtually non-existent. This is undoubtedly associated with the higher proportions of women employed. Temporary workers are being employed less for seasonal reasons as employers become more able to flat plan. Nevertheless, they are increasingly being used as a method of assessing someone on the job before a permanent contract is offered.

In terms of numbers employed, the 1970s, 1980s and early 1990s saw significant job losses and redundancies in both of the industries surveyed. Respondents reported that this downward trend was levelling off, although technological innovations and the introduction of unmanned processes are likely to lead to further reductions in operative staffing requirements.

The chemical, and food and drink industries have experienced considerable changes in recent years and change is continuing to play an important role. As competitive pressures, both national and international are increasing, organisations are having to seek ways of increasing productivity and operating more efficiently. In line with these competitive pressures, a variety of organisational responses have been adopted:

- introducing technology to reduce labour costs
- implementing new approaches to business
- establishing new corporate cultures, such as enhancing 'total quality' and customer orientation
- restructuring the organisation and delayering
- implementing more innovative employment practices associated with 'Human Resource Management', and
- implementing more flexible approaches to working.

In the light of these changes, the following chapter considers the changing role of process operatives and the skills required to operate within the chemical, and food and drink industries.

3. The Skills Required of Process Operatives

3.1 Introduction

One of the main aims of this study was to explore the skills employers required of process operatives and how these skill requirements are changing. This chapter addresses these issues. The term 'skill' is used in its broadest sense here. The literature classifies skill in a number of ways. Distinctions are frequently made between technical skills required for a job; social and behavioural or personal skills (directly required for a job and/or needed for people to work together effectively); and basic skills (*ie* literacy and numeracy). Cutting across these distinctions are the divisions of skills into those required specifically, for an occupation or by a particular employer, and those which are transferable between occupations and employers. The relative importance of these different types of skill vary between occupations and employers.

This study was not aiming to test or evaluate the NVQ occupational standards for process operations, although the skills described were closely related to these frameworks. In this chapter we begin by considering the changing role of process operatives. We then discuss each skill area in turn, starting with basic skills, then turning to the technical skills required for the job, and finally considering the softer, behavioural skills. Process operative functions are clearly evolving. Although the changes taking place are not necessarily universal, elements are present across the two industries. For each skill area we consider the impact of these changes. We conclude by providing a general discussion of the changing skill requirements.

3.2 The changing role of the process operative

We discussed in Chapter 2 the nature and impact of change in the food, drink and chemical process industries. The broad impact of these trends on the role of process operatives is outlined below.

- The introduction of computer technology has meant that operatives are less involved in the manual operative tasks. As machines are increasingly controlled by computers, the operative's role has shifted towards monitoring and adjusting the machine by interpreting information on screens. Process operatives are required to have a greater understanding of the processes. Many of the peripheral, lower skilled, manual process operating jobs are disappearing.
- The majority of employers are breaking down long running boundaries between process operations, engineering maintenance and on-line analysis. Process operatives are gradually taking up elements of these areas, particularly in the chemical industry. Multiskilling exercises and job rotation have been introduced. It has been found to be no longer efficient to have process operatives working on just one piece of machinery.
- Organisational restructuring and the removal of layers of management have led to the devolvement of responsibility to process operatives in many of our participating organisations. Increasingly, organisations are moving to cellular working based on teamwork. Within this structure, process operatives need to make more decisions, for example about the quality of products, hygiene, process and packaging.
- Employers have adjusted their business approach as a result of a more competitive business environment. Operatives are now required to become more customer and business oriented.

3.3 Skill requirements and how they are changing

3.3.1 Basic Skills

Literacy and numeracy are required for virtually all process operative jobs and are becoming increasingly important. There has always been a greater requirement for these skills in the chemical industry than food and drink. For some of the more skilled process operative positions, GCSEs or 'A' levels in Maths and English are now a minimum requirement. However, in the past, particularly in certain sectors of the food industry, it was only the mere basic skills which were important, *ie* 'an ability to

read, write and hold a conversation'. Food processing operators often had a very narrow remit minding a single piece of machinery or operating a single process, such as bottling or packing. An ability to read and write was a requirement in order to understand instructions. However, illiteracy could often be accommodated, and in some food processing operations still can, as one respondent explained:

> *'If an individual is illiterate, it is not necessarily a reason not to employ them. A language barrier is more difficult to accommodate. We are an equal opportunities employer and proud of the fact. We employ some process operatives with special needs and some with Downs Syndrome. It is all about balance. When they are recruited they are shown around the factory and asked whether they think the environment is right for them. While they are working, they are provided with some supervision.'*

Nevertheless, in both industries, the importance of basic literacy and numeracy skills is clearly increasing and there are fewer and fewer jobs for which they are not essential, as illustrated by the following quotes from food processing employers:

> *'Literacy and numeracy are now essential; they were not always. However, dyslexia is not a problem.'*

> *'The ability to count is important when bagging up. If a process operative cannot count, it can throw the whole line into chaos.'*

> *'Some of the process operatives who were employed earlier could not read or write. We no longer employ them. We need a flexible workforce who are able to relieve each other, and that demands a higher level of basic skills.'*

A greater responsibility for documentation, report writing and record keeping, often requiring calculations, were among the reasons given by respondents in both industries for the growing need for these skills. This mirrors the increased role that process operators have in monitoring quality. In the past, these tasks would have been performed by managers, but as responsibility has been devolved, they are being delegated to process operatives. The ability to follow production specifications is also growing in importance, with the introduction of multiskilling, rotation of tasks and short-run batch production. Health and safety requirements were another reason given by respondents for requiring basic skills, even in the most menial of process operative jobs:

'Individuals are responsible for safety; they have to be able to identify the right kind of fire extinguisher and read chemical symbols.'

The introduction of computer controlled processes has also led to this growing need for basic skills. Process operatives increasingly need to operate a computer panel, change the computer programme, record data and use spreadsheets. More advanced or senior process operatives are involved in report writing and the analysis of data.

3.3.2 Other key skills

IT skills

Process operatives now require greater IT skills and knowledge to operate more sophisticated computer controlled equipment. In the chemical industry there has been a move away from manual operating skills, for example opening and closing of valves, to automated, computer knowledge. Process operatives need to know how computer systems work, understand computer controls and how to operate them. Similarly in the food industry, computer controlled machines operated by a control panel have been brought in. As one food processing employer stated, the computers are pre-programmed to run the machines and this has increased the requirement for computer and keyboard skills among process operatives. Operatives have to learn how to operate the computer panel and change the programme for a new line or product.

'Until two years ago the company was computer illiterate. Now it is the opposite. In the next month we are introducing a new comprehensive computer system. This will monitor the product from the order stage, through production to distribution. Employees will have to learn how to record the progress of products through the processing system, requiring new keyboard and computing skills.'

'Process operatives use a lap top connected to a control board to operate the machine and find out what is going wrong.'

Process operatives are not programming the computers but learning the operating commands. In some instances, this involves using bar code or touch screen technology and products are scanned for distribution data. One chemical employer reported that all staff have access to a personal computer. Word

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processing, spreadsheet skills for data analysis, and communication through e-mail were also becoming increasingly evident.

Communication skills

Communication skills, both oral and written, are becoming an essential requirement within processing work. Communication skills include the use of the telephone, radio, tannoy, and e-mail. As we have already outlined, traditionally, a typical food processing operative worked on a single machine or piece of equipment. The introduction of teamwork and the devolution of responsibilities to individual process operatives, rather than their managers, is now requiring more communication along the line. In addition, the introduction of new faster and more efficient technology and more complex processing techniques, demands a higher level of communication skill. This is to ensure shift handovers and job rotation procedures work smoothly and effectively, to limit processing and/or operating problems. Any deviation in operating conditions needs to be communicated to other people in the next shift or rotation sequence. This is particularly important given the high risks involved in some areas of processing work, and the potential for disaster. As one respondent from the chemical industry pointed out:

> *'They used to come in and undertake a process which would be completed during their shift. Now processes have become more complex and last for over 24 hours which demands a completely different level of organisation, planning and communication skill.'*

Giving and receiving instructions is another reason for the need to be able to communicate effectively. Process operatives may be involved in writing out new procedures or modifying existing ones. On chemical plants:

> *'Communication skills are becoming increasingly important for the process operatives in the control room. They need to be able to co-ordinate everything and communicate instructions to the people outside on the plant.'*

The increasing involvement of process operatives in team briefings also requires the ability to communicate orally to discuss work issues. As operatives become more involved in developing new ideas for improvement, there is clearly a requirement for an ability to present ideas, both orally at meetings and in a written format.

Teamworking and interpersonal skills

Changes in the workplace, and the organisation of work into teams, has placed growing emphasis on teamwork and interpersonal skills. As layers of managers have been removed and management responsibility has been devolved down the line to teams and individuals, these skills have become ever more important. In some instances, self managed teams are having to take responsibility for production processes and staffing matters, as well as maintaining standards and quality. This is gradually intended to lead to the loss of the 'it's not my job' attitude. Employers increasingly require a commitment and interest in working with other members of the team. These skills are particularly important within these processing industries, considering the risks that can be involved if things were to go wrong. In the chemical industry:

> *'Traditionally, individuals looked after one job. The chemical reaction they were in charge of did not require interacting with others. Now they are likely to have a team of four looking after six jobs, with a couple of people outside who are monitoring the processes to whom information needs to be relayed back and forth. This is a definite change in working practices with how it was fifteen years ago.'*

With moves towards multiskilling and job rotation in both industries, teamwork is essential. Employers surveyed talked about the requirement to have an understanding of every member of the team's skills and responsibilities, in order to work together, solve problems and get the job done effectively.

> *'Lines or sections are increasingly intended to operate as a team and to communicate about the process and any problems.'*

Allied to these teamworking skills is a growing requirement for interpersonal skills. Employers talked about the need to be able to develop and maintain good working relationships and resolve difficult situations. Process operatives are also becoming involved in the coaching and training of others. Again, with the move towards self-managed teams, leadership and supervisory skills were also seen as growing in importance. The ability to network across the company and deal with customers were other reasons given for this growing emphasis on interpersonal skills for process operatives.

'We are moving closer to our customers. It is not unusual for scores of customers to come and look around the site. In order to maintain our image it is important that process operatives have interpersonal skills.'

3.3.3 Occupation specific skills

We consider in more detail the specific technical skills and knowledge required to operate and maintain processing equipment, in the following sections.

Operating skills

The level and range of operating skills vary between the sectors surveyed and are increasing.

The food and drink processing industry

In the food industry, most skills relate to the use and operation of the processing machines. Respondents mentioned the need for process operators to know the capabilities of the machine, how it functions, what are the right settings, and how to alter it if something goes wrong. The process may involve measuring or weighing of raw materials, checking ingredients, temperatures, belt speeds and mixing sequences. The introduction of multi-skilling and task rotation has resulted in a need for a wider range of operating skills.

'In the past, process operatives would operate one piece of equipment very well, for example a bottle washer or bottle filler. Now they have several rotating tasks, for example operating the decrater, which takes the bottles out of the crate, washing them, filling them, capping them and putting them back in the crate.'

The chemical processing industry

In the chemical industry, operating skills include starting up and shutting down equipment, receiving and dispatching goods, loading correct volumes of material, cleaning plant assets, fork lift driving, responding to emergencies and acting promptly in accordance with site procedures. On the large chemical sites visited, operators tended to be trained to operate on a particular plant and skills are generally not directly transferable to other plants on the site.

'The processes on each plant are very different. It takes 12 weeks to learn one of the jobs on rotation on one plant. It is like the difference between driving a truck and a car.'

Again, job rotation is leading to a requirement for a greater range of operating skills, as the following quote from a pharmaceuticals employer illustrates:

'Process operatives are expected to learn more and more about the whole liquid processing area; how to work different equipment involved in mixing, heating, homogenising etc. *They are learning more than one piece of equipment,* ie *how it works, how to set it, how to alter or make adjustments.'*

Technical understanding

As technology has advanced and processes become more sophisticated, operating jobs have required more technical knowledge. This is both in terms of operating the equipment and computers (as outlined above) and developing an understanding of the processes and products themselves. As one chemical employer stated: 'in the past this was something which was nice to have, now it is vital'. With the introduction of technology leading to fewer process operatives working on a chemical plant, the job has become more conceptually based. A lot of skills relate to the understanding of the process, the consequences of making small adjustments, and the integration of the processes within the factory. An understanding of the properties of the product was also mentioned by respondents.

'We are in the business of developing new technology and new products. Process operatives need an understanding of what is happening on the plant to be able to contribute and get more involved in the processes they are undertaking, adapting quicker and coping with changes as they arise.'

Operatives need to know how to react if the process is not running to plan. The understanding of line diagrams was also noted by both chemical and food processing employers surveyed.

Although this technical understanding was something which appeared to have greater importance in the chemical industry, these changing requirements are also evident within the food and drink sector. Dairy employers, for example, increasingly require an understanding of how milk should be treated, what affects the quality of the product, and the chemistry of milk

production. Brewers are demanding a greater understanding of the brewing process.

Engineering skills

As noted earlier (Chapter 2), occupational boundaries between process operatives and craft engineers are becoming increasingly blurred. Process operatives are being trained in basic engineering and maintenance tasks. The aim is to speed up changeover and handover times, reduce costly downtime, and ultimately to increase overall efficiency and productivity. Respondents in the chemical industry listed some of the areas of engineering skills in which process operatives are being trained:

- basic pipe fitting skills, dealing with breakages of pipes, taking pipework down and remaking pipes to facilitate changeovers
- lubrication
- the replacement of pumps. This may involve disconnecting pipework, getting someone to make it safe electrically, replacing the pump and putting it all back together.
- the removal, dismantling and replacement of valves, and the carrying out of simple repairs to control valves
- instrument checking and testing
- interpreting engineering drawings
- electrical checks
- scaffolding and rigging, and
- ensuring all equipment used meets site standards.

This process of blurring occupational boundaries seems to be more advanced in the chemical industry than food and drink. Indeed, there were several respondents within food processing, who did not even seem to be contemplating such a move. However, there was still evidence of change in some areas. Some examples of engineering skills that process operatives have been trained in included: basic servicing, routine maintenance, and general repair work such as stripping machines down, dismantling and assembling.

The manner in which these skills were being introduced varied across the employers visited. Where organisations were introducing engineering into processing work, some employers were training all process operatives in basic engineering skills; others

were concentrating on senior operatives, or those with more of an engineering aptitude; and some were only training certain operatives in certain engineering skills or tasks.

It must be emphasised that the engineering tasks being carried out by process operatives are generally simple and routine. There is said to be a huge gulf between complex engineering work and simple work. At one time employers sub-contracted much engineering work to increase efficiency. Now employers feel this can also be achieved by delegating a lot of the routine and simple engineering tasks to process operatives themselves, instead of them 'waiting for hours for an engineer to come' when there is a machine failure.

> *'If a breakdown occurs in the machine, for example packaging gets stuck or valves need opening or closing, this now falls within the remit of the process operative's job.'*

This reallocation of routine tasks is intended to free up craft workers for the more complex, technical and sophisticated engineering work. Not only are process operatives becoming increasingly involved in machine maintenance and servicing, but they are also being trained to undertake more preventative maintenance. This has meant detecting and resolving faults before they occur, hence reducing the incidence of machine breakdown and downtime. In the food industry there were examples of process operatives being in more control of staffing and product handovers and changeovers, *ie* changes in the staff for different shifts or in product ingredients and packaging for different products.

> *'In the past, a higher level process operative did the handover and changeover tasks. Now it is a multiskilled process operative.'*

These engineering skills are also increasingly giving some process operatives more say in how the line functions and making suggestions for improvement. However, within these new roles process operatives need to know the limits of their knowledge, to be fully aware of the parameters of their job, and to recognise when it is necessary to call in more specialist help from a qualified engineer.

> *'They must know when to call in a maintenance engineer, if problems are severe and outside the boundaries of their job.'*

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'Process operatives still need to know when it is appropriate to call someone else in and where they should not attempt to solve the problem, because in some cases any delay in action, or wrong action, could be jeopardising safety and putting lives at risk.'

Problem solving

In line with the uptake of engineering and maintenance skills, our respondents reported that process operatives increasingly have to identify and solve problems. The introduction of new technology and the devolvement of certain responsibilities to process operatives have also contributed to the requirement for problem-solving skills. Computer controlled processes, in the food, drink and chemical industries have replaced the more physical work, freeing up more time for thinking. In Chapter 2, we detailed the reduction in the numbers of process operatives required to operate chemical plants and food processes. Those that remain need to be able to detect problems early and put them right. In some sectors of the food industry, this growing importance of diagnostic and problem-solving skills represents a significant change from traditional process operative skill requirements.

'In the past, when the line stopped, everyone twiddled their thumbs.'

'No-one can afford to stand around and kick their heels anymore.'

One respondent reported that problem-solving skills have always been important. However, whereas traditionally process operatives would solve problems with the supervision or the guidance of a manager, responsibility is now being devolved to process operatives themselves, often through teams. One chemical employer explained that although the need for problem solving and diagnostic skills has not changed, the nature and level of them has. At this company, team size had reduced from seven to three or four, and elements of self management were being introduced. In addition, new process operatives must diagnose and solve problems more themselves, rather than relying on supervisory assistance from their managers. This generally demands a higher level of skill. As well as problem solving, process operatives were also becoming more involved in thinking about the process, developing ways of reducing waste, increasing efficiency and identifying new machinery.

Analytical skills

Again, reflecting the changing role of the process operator and the introduction of computer technology, respondents talked about the increasing need for analytical skills. One of the chemical employers explained that traditionally the process operative's job would have been largely to follow instructions. Now the job required process operatives to become more involved in interpretation, the review of plant performance, evaluating options, troubleshooting and making decisions alone and with others. Another chemical company stated that they required operatives to have the ability to think through the consequences of their actions, provide logic and reasoning to support actions or recommendations.

Some chemical plants demand laboratory analysis skills of process operatives. Laboratory technician work is beginning to be introduced on-line, as plants in the chemical industry are moving towards becoming small laboratories. On line instruments have been introduced and process operatives may now be involved in taking temperatures, pH testing, measuring pressures on line and feeding data directly into statistical control areas.

Chemical, food and drink industry employers are operating in a more and more competitive environment, creating a continuous drive to improve efficiency and keep down costs. In addition, technological innovations have reduced the manual element of process operative work, and as one employer pointed out:

> *'With every pair of hands comes a free brain.'*

As such, employers are moving towards involving process operatives and enabling them to contribute to decisions made to increase efficiency.

> *'Twenty years ago supervisors were appointed to demand and control; now the philosophy is to empower and involve process operatives — this is a key change.'*

> *'Thinking skills: we need to get people to think more about a wide range of things, ie about the business and the process.'*

We found examples in the food industry of process operatives having more of an input into commissioning work and the design of new hi-tech machinery, thus tapping their understanding of the process.

Maintaining standards

We outlined in Chapter 2 the growing focus on product quality. Within the food industry, this reflects the increasing sophistication and requirements of customers and legislation. Similarly, the chemical industry is becoming more and more regulated. As a result, standards need to be maintained, documentation must be precise, controls tighter and there is a need for much greater accuracy. This has implications for process operatives in both industries. They have an important monitoring role to ensure machinery is in order and operating correctly, together with a responsibility for the quality of the product.

Our research found examples within the food industry of the centralised quality inspector role being reduced to an auditing function, where they were overseeing the process operative. Increasingly, process operatives were monitoring the quality of products themselves and teams have been empowered to take responsibility for their own work.

> *'Process operatives need to be able to assess the quality of the fish and identify the type of fish. Previously, one person in the factory would do this, but there have been cases of being done by the Trades Description Act. It is now very important that all staff have these skills.'*

> *'We expect operatives to pick up on rejects and maintain standards. In the past this was done by the supervisor or quality assurance inspector but now, as we are producing a lot more, we need to put in more checks so that problems don't arise and we can ensure quality is maintained. This was also stimulated by the public. After all, they don't want fingernails in their chocolate do they?'*

Although hi-tech equipment is able to assess the quality of products, there remains a requirement for visual inspection skills and attention to detail. Process operatives need to be able to recognise non-conformance. One food industry employer mentioned checking bag seals, dates, registration and bag shapes. For another:

> *'Process operatives must know how to undertake physical checks of the product, ie are densities right, constituency right, coatings right, shape right* etc.?'

Administration and management

Again, with the devolvement of responsibility to self-managed teams, it has become increasingly important in some process operative roles to develop effective administration skills and to be able to keep accurate records of what has been done. In the food industry, where the biggest single issue is hygiene, record keeping is vital. Planning and organisation skills are also key, particularly where process operatives are taking on supervisory functions. Such operatives are increasingly required to plan resourcing, represent the views of work teams at site meetings, and monitor, assess and report on the performance of others.

Business awareness

Although not specifically a skill area, the employers visited talked about the importance of having an understanding of the whole business. Respondents reported that process operatives should know about what the company stands for: its goals and values; the products; what the customer wants; and how this information relates to their job. Becoming more customer focused was a common theme, and this could apply to both internal and external customers. One of the food employers surveyed was providing indicators and measures of company performance which could be fed back to employees. Staff were meant to be more concerned about working together for the common good and to understand how they fitted into the bigger picture. In some companies, higher grade operatives were seeing an increased involvement in business decisions.

3.3.4 Personal skills

As well as the areas of skill detailed above, a range of personal qualities were required by our respondents.

- **Personal hygiene** is paramount in the food and drink industry, particularly when handling fragile food stuffs. The 1990 Food Act dictates minimum standards of hygiene on the shop floor.
- **Flexibility** is clearly an increasing requirement in the light of the need to adapt to processing different products and taking on new tasks in areas such as engineering and quality assurance. In the food industry, operatives may now be required to change the product or rotate tasks several times a day. If someone is not flexible, the number of jobs they can do is limited, and there is less and less scope for the employment of

people without the ability to adapt. As some food and drink and chemical employers outlined, the move to short runs affects the need for flexibility: machines need to be set and reset, cleaned more frequently and the ingredients changed. Process operatives generally need to be able to respond to new product specifications quickly. The ability to handle more than one job at a time is also becoming more important.

- **An ability to learn.** The continuing technological innovation, multiskilling, and introduction of new products and processes, requires an ability and willingness to learn new skills.
- **Maturity,** a responsible attitude, trustworthiness and self control are clearly requirements, in the light of the potential dangers of the jobs. These personal qualities were generally more relevant where process workers were undertaking very responsible work and where it was essential that they adhered very closely to the strict health and safety and hygiene codes. Small teams often work on very large plants, requiring a need to be self reliant. One respondent in a chemical processing plant described the sorts of dangers and responsibilities that can be involved in a processing job.

  'The plant consists of a ten-stage purification process and three reactors. There are extremely high temperatures and pressures within the production process. Because of the high risks involved, the processing plant has to have careful emergency procedures in place which identify danger, and when things are going wrong, and can prepare to shut down the plant if necessary, through automatic shutdown processes. The process once initiated takes four hours to shut down and once started cannot be stopped. It then takes a further 36 hours at least to clean the plant and to start it up again. At a cost of at least £10,000 per hour, this can be an extremely costly exercise and make a major difference between making profits and breaking even. It is thus vital that process operatives can cope in such stressful and responsible jobs. Their ability to identify problems and to rectify them before shutdown can make huge difference to a company's economic performance.'

- **Positive attitude.** There is a move away from instrumental attitudes. Employers no longer want employees who are just working to take home their pay at the end of the week. A positive approach and attitude to work, a desire to improve and do things better, the potential to work beyond what is expected, and commitment to the company's goals were among the attitudes expected by our respondents.
- **Physical fitness** is still a requirement in some process operating roles and in the chemical industry in particular. Traditionally,

much of chemical plant processing work was quite physical, for example involving 'humping bags', operating pumps, operating big ovens, carrying crates and such like, and climbing scaffolding. However, with the demise of manual work, physical strength is no longer fundamental to the job, although for some functions stamina is important.

- **Manual** dexterity remains important for some operative roles, such as packaging.

3.4 Summary

The role of process operatives is changing:

- The introduction of computer technology has meant that operatives are less involved in the manual operative tasks and are required to have a greater understanding of the processes.
- Process operatives are gradually conducting simple and routine engineering and maintenance tasks, particularly in the chemical industry. Multiskilling exercises and job rotation have been introduced.
- Process operatives are becoming more involved in decisions, for example about the quality of products, hygiene, processes and packaging.
- Operatives are increasingly required to become more customer and business oriented.

As a result of this changing role, the range of skills required of process operatives is broadening. Although not all process operatives require all the same skills to the same level, the main skills and abilities required of process operatives can be summarised under the following headings:

- basic skills: literacy and numeracy
- other key skills: IT skills, communication skills, team working and interpersonal skills
- occupation specific skills: technical understanding, engineering skills, problem solving, analytical skills, maintaining standards, administration and management, and business awareness
- personal skills: personal hygiene, flexibility, an ability and willingness to learn, maturity, a positive attitude to work, physical fitness and manual dexterity.

4. Indicators and Measures of Skill

4.1 Introduction

It can be seen from earlier chapters that process work has been going through considerable changes in recent times. Although the nature and rate of change has varied both within and across the food and drink, and chemical processing industries, the broad direction of change has been similar. Indeed, as the processing operative role develops, in association with technological and organisational changes, many employers are increasingly looking for both a higher level and wider range of skills. This change is undoubtedly most advanced in the larger, leading edge and blue-chip companies, with other smaller establishments at varying stages of development. But nevertheless, where these changes in skills are taking place, this is having important implications for the recruitment process, and for the indicators used to measure and explore the abilities of potential recruits and existing employees. It seems that as the level and range of skills required becomes more critical to the work, employers are taking more steps to formalise processes and to ensure they recruit the right sorts of people. As such, they are increasingly using a greater variety of more sophisticated recruitment and selection techniques, which specify skill requirements more closely.

This chapter explores these changes in more detail through an examination of the various ways that the sample organisations in the chemical, and food and drink industries, identify and measure the skills of process workers, and undertake recruitment.

4.2 The recruitment process

Recruitment among the establishments visited has tended to be rather low over recent years. This has largely been because, as earlier chapters have discussed, many of them have been focusing more on downsizing and reducing the size of their workforces. This has been in association with organisational restructuring processes and the implementation of new working practices. However, this does not mean the recruitment process has not been reviewed, changed and updated over this time. This study identified many organisations which have modified aspects of their recruitment process in some way. Overall, employers appear to have been formalising practices and taking steps to make recruitment and selection more rigorous and reliable.

Traditionally, many employers recruiting process workers within the food and drink, and chemical processing industries appear to have relied quite heavily on drawing their labour supplies from local labour markets. In the past this has often led to the use of more informal recruitment practices in some, if not all, aspects of the selection and recruitment process. This situation appears to have arisen for a variety of reasons. For instance:

- The generally low level of skills required for many of the traditionally unskilled or semi-skilled process jobs appears to have been sufficiently met by the existing attributes of local labour. It has thus been possible to identify suitable people, without the need for rigorous selection techniques.
- Since processing companies have often been large and located in similar geographical areas, they have been highly significant employers within local communities. As generations after generations of families and friends have joined the same employer, and undertaken similar sorts of processing work, recruitment processes have often become quite informal. They have relied upon personal recommendations and 'word of mouth' networks, operating among the community. This has been the case, in particular, in areas such as fish processing, the dairies, drink production and distilling, and aspects of heavy chemical processing and pharmaceutical production.
- In addition, fairly extreme levels of high or low turnover, traditionally experienced by many processing companies, has often discouraged employers from investing in more formalised and rigorous selection procedures. The need to respond quickly to fluctuations in demand in some sectors of the food industry

has meant that some employers have 'grabbed anyone they can, as quickly as they can'.

This study, however, has identified signs that this situation is changing. For instance, as the level and range of skills has altered within the occupation, most employers appear to have changed, albeit to varying degrees, the number and type of selection techniques they use, and the criteria or identifiers used to measure skills. It has thus been important to establish: what are the minimum skill requirements or 'identifiers' specified by different organisations within the food and drink, and chemical processing industries respectively. What recruitment and selection techniques are currently being employed, and how exactly these have changed in recent years.

4.2.1 Selection criteria — 'identifiers'

Traditionally, few minimum skill requirements have been specified for process workers in both the food and drink, and chemical processing industries. This has been particularly the case at the lower levels of processing work requiring the least skills. As the following quotes illustrate:

> *'There were very few minimum criteria in the past. We basically asked "are they breathing?!".'*

> *'It was a case of "well, have they got two arms, two legs and a head?".'*

However, this appears to be changing in some areas, as the following discussion shows.

Qualifications

In the past, qualifications were rarely specified as minimum skills requirements within the selection of process operatives. Therefore, they have not been used widely as formal indicators of basic levels of competence, intellect and technical ability. Indeed, for the majority of process operative jobs, this is still largely the case. Thus, many employers are still only looking for indicators of basic skills such as literacy and numeracy rather than set qualifications. For this, a 'basic level of education' or 'good, sound schooling' frequently seems to suffice, rather than a specified number and/or type of formal qualifications. Evidence of basic

skills may also often be sought through interviews and application forms which ask for details of past educational and work experience. In addition, individuals' basic skills may often be independently assessed through tests (see Section 4.2.2 for a fuller discussion).

However, in the light of some of the changes in process work, there are signs that this is changing. This is particularly the case in the chemical industry but also in some areas of food and drink, such as the dairies, and the brewing and distilling of drinks. Some employers, although they were not recruiting at the time of the study, stated that in some of the more skilled process operative positions, GCSEs and 'A' levels, in subjects such as English, Maths and Science, were now a minimum requirement. These qualifications were thought to be indicative of a certain aptitude, technical ability, and level of literacy and numeracy. In the case of science subjects such as Biology and Chemistry, they also provided a basic scientific and theoretical understanding, helpful in learning about the details of processing operations. These qualifications were thought to give a useful background in many aspects of chemical processing work in particular.

Vocational qualifications such as NVQs/SVQs or ONCs/HNCs were only occasionally used as indicators in the selection of process operatives. While some chemical process workers were working, or had in the past worked, towards a City and Guilds in Process Work (now known as the '060') once they had secured employment, it was generally not specified as a minimum skill requirement for the job. It was thus favoured more as a means of developing specific scientific and processing knowledge on-the-job rather than as a selection tool. The qualification was certainly not universally applied. An increasing number of employers in the chemical, and food and drink industries were introducing NVQs/SVQs into their training programmes, but as yet very few people have actually attained the qualifications. Those that have, tend to still be at the lower levels, namely Levels 1 and 2. It was thus generally believed to be too early to use them as indicators in selection advertisements and general recruitment processes.

> *'The day will come when job applicants will knock on the door with an NVQ asking for a job. The NVQ will tell us something about them but they will then need to learn the processes here.'*

It was felt that in time, as more process operatives move into more technical aspects of processing work, such as quality control

and/or engineering maintenance, employers may increasingly look for higher level and broader vocational qualifications like, for example, ONCs/HNCs. However, this was also a more limited practice at the moment.

In association with technological developments and the introduction of computerised process control systems, some organisations were beginning to look for more evidence of computer literacy and IT skills for certain areas of processing work. This was rarely specified as an essential requirement in recruitment, or indeed assessed in the form of minimum qualifications. Nevertheless, some employers did view experience in computers favourably. As one respondent commented:

> *'We do not look for specific IT skills in recruitment, but there needs to be a lack of fear of computers.'*

Looking to the future, many employers thought there would be a greater need for a theoretical and scientific background, and technological and process control knowledge, among process operatives. This was especially true in the light of further developments in processing work. For example, future technological changes or organisational restructuring and 'empowerment' processes were expected to demand more of these operatives in the future, and increasing responsibility. If these process operatives were to be equipped with the necessary skills to meet these new challenges, it was thought recruitment processes would have to be constantly adapted, to ensure people with the potential to continually develop were identified and selected.

Personal qualities and skills

The earlier chapter on skills (Chapter 3) has highlighted the growing importance of personal skills in process work. Such skills are thus currently a crucial identifier within recruitment. However, through the years there has been a changing emphasis on different personal skills. While some have always been important to the job they may not have always been assessed properly within selection in the form of tangible, objective criteria. In recent years this has begun to change. Some traditional personal skills are no longer being used as minimum requirements. Others are being more closely specified and employed as key identifiers in the selection process.

For instance, many employers confirmed that for some time they had seen personal qualities, such as maturity, stability, good time keeping, reliability and responsibility, as key elements in the selection process. This was particularly true for the more skilled process operatives.

> *'The requirements were informally that an individual would be at least 25, male, white and married with children. These characteristics were looked for because they were believed to be indicative of a stable, mature and responsible person. Someone with a family was traditionally perceived to be someone with the personal qualities and maturity to cope with the job. Such a person with commitments is also more dependent on their income and thus prepared to do variable shift work.'*

> *'We look for time keeping and personal discipline which means an ability to get up for 6am shifts. School leavers find this difficult at first.'*

> *'We do not recruit young people straight from school because of the need for maturity in the job.'*

However, there were other personal skills requirements and qualities identified which had been important in recruitment more widely for all levels of processing jobs. These more general personal skills included things such as cleanliness in the food industry in particular, good health, and having the right sort of personality.

> *'We look at appearance, whether they are smart, tidy, no nail biting.'*

> *'Personal hygiene and appearance are very important because process operatives are working with food and to very strict hygiene codes and regulations.'*

> *'They must be friendly, sociable and fit in, and have a cheerful disposition.'*

However, in the past, employers tended to make less formal stipulations for the least skilled processing jobs. This was especially the case for very mundane and routine, unskilled work in many organisations in the food and drink processing, chemical and pharmaceutical industries. In these areas, personal skills, although desirable, were certainly not always essential:

'Before the new selection scheme, new recruits would have rolled up at the gate on Friday and started on Monday. The only criteria to work was whether they were fit.'

Although personal skills were often stressed as important for more skilled processing work, they were not always in the past clearly specified, and therefore properly assessed, in the best or most appropriate ways. Managers making selection decisions often seemed to act more on 'gut feelings' or 'hunches' based on their work experience. As such they used their own individual and subjective indicators of personal attributes and skills:

'The foremen assessed people in the past by chatting to them. They looked for practical skills and to see if they thought people could pick up work quickly. Most were assessed as they walked through the door. There wasn't much science in the process.'

It appeared that the use of informal criteria could suffice in the past because:

'If all else failed and a totally inappropriate person was selected, they could easily be fired. Employment legislation was more relaxed in the past and many companies could more easily operate a "hire and fire" policy to counter poor appointments.'

This suggested that some employers felt that they had traditionally had more flexibility to alter selection decisions or rectify those that went wrong. Under these circumstances there was less need to ensure the 'right' selection decision was made first time. This was especially the case where turnover was also high and an employer knew the less suitable people were more likely to leave.

There are some areas where these traditions still predominate and the use of formal selection criteria has not been widely introduced. The following example illustrates this point:

'We grab anyone we can, as quick as we can. Some can't read or write. We are working on developing minimum criteria. At the moment the only criteria is whether they have two arms and legs.'

However, as the importance of personal skills has intensified, many employers seem to have looked more closely at both the nature and breadth of personal skills that they require. Thus, recruiters are increasingly stressing broader measures of personal skills, such as teamwork, communication and interpersonal skills,

as minimum requirements. In addition, an individual's attitude too has also become even more important. As the earlier chapter shows, potential recruits have to be able, for instance, to demonstrate that they are flexible, positive, willing to learn, are committed to their work and the company, have initiative, and hence have an appropriate attitude. Those who are not willing to be flexible will not be selected.

> *'Labour turnover has traditionally been quite high. Exit interviews have shown that there are people who want to stand doing one job and to get on with it. So, we will identify these types in the selection process and will not recruit them.'*

However, technological developments and changes in working practices have not only broadened the range of personal skills specified in the recruitment process. In some areas, organisational change has also reduced the emphasis on some personal attributes considered important in the past. For instance, as many areas of processing work become automated and computerised, and increasingly replace much of the manual components of the process operatives job, elements such as physical strength and fitness may be less important.

> *'We took a lot of farmers and builders on in the past who could cope with physical work. It was more like a general labourer's job then. But it's not the case now.'*

> *'In the past, process operatives were taken on as labourers and were out in the field more, operating valves and climbing scaffolding. The job was more physical.'*

> *'The job is less manually oriented now. There is less physical work. We now want mental adeptness to develop, and need to assess mental potential.'*

> *'Twenty years ago the ideal type was an ex-miner or ex-forces, physically fit, able to follow instructions in a recipe book. The job was very manual and a military background was very good for following instructions. Now the profile is totally different. An engineering background is good, with technical ability and interpersonal skills.'*

Furthermore, as some employers put more emphasis on empowering their employees and developing individual initiative, they are placing less emphasis on things such as 'an ability to follow instructions to the letter' or being able 'to do as you are told' in the recruitment process.

Work experience

Work experience traditionally has not been an essential requirement for a processing job in the chemical, or food and drink, processing industries. Indeed, respondents said experience was rarely specified at all in terms of, for example, set periods of time or types of experience. While industrial experience was sometimes seen to be beneficial, this still generally appeared to be interpreted in a broad sense. Thus, it was advantageous to have a general awareness of the business, and/or industry, how it was structured and how it operated. However, more specific technical and/or processing knowledge was less important. This mainly appeared to be for two reasons. First, it was frequently the case that the specific technical knowledge necessary to undertake many processing jobs was easily acquired. This was especially so among the least skilled processing and machine minding jobs in, for example, food and drink processing.

> *'It's the attitude and personal skills that are the most important, not the experience. Anyone with the basics can be taught how to operate a machine.'*

Second, the degree of technical, transferable skills within processing work was generally more limited. This is largely because of variations in the nature of different companies' technology, processing requirements, and work organisation and structure. This means most process workers, after having secured a processing post, are generally still required to undertake quite distinct company training before they can become proficient. Employers stated that they need them to acquire fairly company-specific technical skills and processing expertise. While technical experience gained elsewhere may be used as an indicator of aptitude and potential for future development, it tends not to be stipulated as a minimum requirement.

Nevertheless, there are signs that this is changing in association with changes in some areas of processing work. For instance, because of the increasing importance placed on personal skills, work experience which developed these skills is in some cases being seen as an advantage. This relates in particular to areas such as communication and interpersonal skills, people management and supervisory skills, and teamworking. In addition, as some processing organisations are increasingly blurring the boundaries between engineering and processing jobs, more practical and mechanical experience is also being viewed more favourably.

This is especially the case in the chemical processing industry. This sort of experience, unlike specific processing knowledge, is a better generic indicator. It thus provides employers with an effective measure of an individual's ability to take on such aspects of the job. A trade apprenticeship, in particular, was being favoured in some instances, especially for the more skilled processing jobs.

> *'We prefer people with a practical background. We look for people who are in a practical sort of job. For example, those with previous experience in fitting work are among the more successful recruits.'*
>
> *'A formal trade apprenticeship is regarded very highly.'*
>
> *'We would now increasingly look for people with experience of work. For example, mechanical fitting, electrical engineering, instrument mechanic.'*
>
> *'Some of the sites are increasingly recruiting people with basic engineering and mechanical skills. Generally this means an understanding and use of hand tools. Most people can use a spanner and screwdriver. It's the basic tool kit skills we now look for.'*
>
> *'Now the profile is totally different. An engineering background is good, with technical ability and interpersonal skills.'*

4.2.2 Selection techniques

There are a wide variety of selection techniques that employers of process workers may like to use in a recruitment and selection process. The main ones cited included: interviews, written and practical tests, and work trials.

Interviews

Interviews were by far the most common selection technique, and thus the primary means of assessing personal and technical skills. Generally, interviews have tended to follow a fairly informal structure. As such, managers have rarely interviewed candidates using a standardised question format. Neither have they assessed them against a formal set of competences or skill requirements.

Among those interviewed, selection decisions were usually made by line managers, such as production or line supervisors and/or personnel staff. Furthermore, questioning was most likely to

take place around past educational and work experience, and personal interests. Generally, it appeared that personnel managers elicited information regarding general and personal skills, and interests. Alternatively, line managers questioned candidates about more job specific and specialised experience and skills.

However, not all interviews followed an informal structure. For instance, one organisation which had developed a fairly structured training programme for its process staff, was beginning to develop a more formal, structured and standardised interview process for selection purposes. This was being developed with the assistance of an external consultant. The interview design was intended to measure candidates against an occupational profile. This was linked to NVQ competences and pre-determined organisational skill requirements for the job. Another organisation was also using a similar focused approach to interviewing, based on an assessment of minimum competences for the job.

The interview format varied by organisation. Thus, the selection process either involved: one interview with a single manager, several managers in one interview, or several interviewers in a sequence of interviews. However, one interview seemed to be more common.

Testing

Many employers, both within the food and drink, and chemical industries, are increasingly employing more structured and formalised selection techniques. Thus, within the selection of process workers, as well as using application forms and interviews, they have also been found to be using tests.

The primary rationale for this change, in essence, relates to broad changes within the job. Thus, as the job skills are perceived to have become more varied, and/or the level of skills has increased, it has become more important to closely specify the minimum skill requirements for the job. This tends to ensure the most appropriate employees are selected from the start. Employers see tests as a way of enhancing the reliability of these selection decisions and ensuring that individuals will be capable. The tests are also increasingly being designed to measure an individual's future potential. This is largely as a means of assessing the extent to which a person can 'grow' within the job in the light of

any continuing change. Since qualifications have traditionally not provided an appropriate indicator of skill and ability (Section 4.2.1), employers have had to look to more helpful identifiers and objective selection tools.

Some organisations have been using practical tests which are intended to assess abilities, such as an individual's manual dexterity and logic. For example:

> *'They would basically be required to screw down nuts and bolts. This is intended to test their co-ordination, ability to use both hands and their general dexterity.'*

> *'There are ten to 12 practical tests. That is dismantling and putting back together mechanical equipment. This is to see how they handle it and tests their ability to follow instructions.'*

However, written tests appear more common. Generally, the written tests, at the very least, have been designed to measure basic levels of numeracy, literacy and/or communication skills. For example, applicants may be given a basic English, spelling or maths test. In many companies visited, however, more extensive and specific aptitude and psychometric tests have been employed. These are generally specially designed, often by external occupational psychologists, to measure and identify a broader range of quite particular process skills. These have included things such as problem solving, logic, visual checking and inspection, perception, processing knowledge, mechanical reasoning and aptitude, and manual dexterity. In several instances, the extension of the tests to assess these broader skills seems to be in close association with general changes in the job. Thus, the skills specified are, for example, reflecting the fact that broadly, employers are wanting process workers to: take on more responsibility; operate more flexibly; and interchange among a greater range of processing, engineering and quality control tasks, hence, to be more 'multiskilled' (see Chapters 2 and 3).

Selection decisions based on these sorts of tests generally involve assessing an individual's test results against pre-set standardised test scores. These scores act as norms for that occupation and provide a measure of the individual's potential capabilities. These scores may have been developed internally and based on 'ideal' process operatives already working within the organisation. Alternatively, they may have been designed by external consultants and based on larger industry-wide occupational groups or populations.

In addition to psychometric testing, some organisations are also using special personality tests and psychological profiling to inform their selection decisions. This often involves asking individuals to complete a short questionnaire and assessing them against pre-determined personality profiles. In this way, employers can more accurately identify the personality types that they want among the people working in their organisation. As with the psychometric and aptitude tests, these profiles may be developed internally by the organisation itself or externally by consultants.

Although companies in food and drink and chemical processing have been placing increasing emphasis on tests, the use of testing as a selection tool appears to have been more prevalent for a longer period of time in the chemical industry. However, tests are not being universally applied. Thus, there are still areas, particularly in the least skilled processing jobs, where tests are still not thought to be a necessary part of selection.

Work trials

Many of the organisations surveyed, in addition to interviews and tests, were also assessing the suitability of people for processing work directly on the job. This 'work trial' provided another means by which employers could identify those individuals who would not be suitable. Hence, it was seen as an effective back-up for the selection process. The work trial most frequently involved employing an individual for a probationary period, during which their general performance, aptitude and ability would be monitored by line management. Most probationary periods seemed to last for no longer than six months. In most areas of processing work, this allowed enough time for an individual to have gone through initial company training and to have begun to develop their proficiency while on the job. In some instances, employers were beginning to formalise these probationary periods by linking them to the attainment of qualifications or standards such as NVQs/SVQs or hygiene certificates. Under such circumstances, they were generally expecting new recruits to have attained minimum levels by the end of the probationary period. In this way, they were using these measures as a condition of continuing employment with the company.

Where probation was not used, this seemed to be because employers had already observed new employees' skills on the

job by other means, for example, through temporary work. A number of organisations which were employing temporary staff and seasonal workers, to meet fluctuations in their business activity, were selecting the best of these to meet their changing labour requirements. This had the advantage that the employer already could see how the individual had adapted to the company and the work. The process for selecting some of these staff was quite rigorous. For instance, at one organisation, as well as controlling the selection of temporary staff at the agency, it ensured their performance was formally reviewed and appraised by line management on a regular basis. In addition, temporary staff were also involved in an internal appraisal interview to decide whether they would be eligible for permanent work. This interview was quite structured and involved assessing an individual's suitability in a number of areas. These included their technical skills; ability to meet company needs; team-working ability; punctuality; reliability; understanding of the company and its business; how quickly they had settled in; appearance, dress and hygiene; initiative; their productivity; attitude, in terms of (for example) commitment to producing good work; and general strengths and weaknesses.

In another company, this had been taken a stage further, in that not only were they using an agency to recruit their new staff but to train them as well. This company had carefully selected the agency to ensure that it was both aware of and receptive to its industry's needs. It had then carefully trained the agency staff to ensure that they could recruit quality staff and provide training to the appropriate standard. Since it has proved to be so successful they now only recruit through the agency and have developed structured interviews, competences and tests, specifically designed by external consultants for the agency to use.

4.2.3 Developments in recruiting young people

Recruitment of young people onto a Modern Apprenticeship programme was a recent departure for some of the heavy chemical companies. Individuals were recruited onto a training programme delivered by a local college. In some cases, this was run jointly with other chemical employers. One example of this was a two-year, college-based training programme which led to an NVQ Level 2, followed by a third year based on-site, leading to a Level 3 NVQ. The initial entry requirements to these types of programmes are a minimum of four or five GCSEs of grade C

or above. Applicants also go through a rigorous testing procedure, involving both written and practical aptitude tests. Following the two years at college, the Modern Apprentices often go through a further selection process. Therefore, all trainees are not automatically taken on permanently. Employers operating such programmes felt that they were significantly enhancing the calibre and skill levels of their workforces. Large volumes of applications were being received and the standard of those recruited was considered to be very high.

4.3 Summary

This chapter has explored the changes in the recruitment and selection process. This has involved exploring in more detail the way in which employers identify and measure skills, and undertake selection decisions.

In the light of organisational changes, and more specifically the nature of processing work, employers within both the food and drink, and chemical industries, are modifying their recruitment processes and selection criteria. As the level and range of skills required to undertake the job has increased, employers are taking more steps to formalise the process and to ensure they recruit the right sorts of people. They are:

- **using a greater variety of more sophisticated recruitment and selection techniques**. These are involving an array of tests, interviews and work trials.
- **more closely specifying the minimum skill requirements**. These minimum indicators include: some academic and vocational qualifications, personal skills, and practical and mechanical skills and experience.

However there are differences by industry and occupational grade. These changes are particularly apparent for the more skilled processing jobs and within the chemical industry. Thus, many higher level chemical processing jobs would commonly call for a wider range of minimum skill requirements than food processing. This would probably include things such as qualifications, measures of practical skills and specific personal skills such as maturity, reliability, responsibility and so on. These would then probably be assessed more rigourously through the selection process.

5. Skills Gaps and Recruitment Difficulties

5.1 Introduction

This study has identified some considerable changes in the nature of processing work and the ways organisations conduct their business. This has had important implications for the characteristics of the processing workforce, and the skills and abilities required of process workers. Indeed, many employers seem to have begun modifying their working practices to ensure they recruit, retain and develop individuals with the necessary skills to undertake process work, both now and in the future. While there is evidence that practices have been changing, some employers have experienced problems attempting to achieve their aims and have had to work to override a number of skills gaps and/or recruitment difficulties.

This chapter explores some of the key areas of processing work that have presented problems in relation to skills for some organisations within the chemical, and food and drink, processing industries. It starts by examining the main difficulties experienced by some employers recruiting people from the external labour market, and then moves on to consider the nature of skills gaps within the existing processing workforce.

5.2 Difficulties in recruitment

As recruitment has tended to be low among many of the processing organisations involved in this study, recruitment difficulties were not abundant. In addition, where they did exist, they did not appear to be causing major problems. This was largely because many companies were not expanding their processing workforce to any great degree. However, there were

differences between the chemical, and food and drink, processing industries in this study.

5.2.1 The problems of a poor industrial image

More recruitment difficulties were generally experienced by the food and drink processing organisations contacted, than by the chemical organisations. In many instances, this seemed to be because these organisations (particularly within food) were suffering from a history of poor working conditions and a bad traditional image. Although employers believed things are changing and many are taking steps to try and break old traditions, it has sometimes proved hard to dispel images of the past and traditional impressions. This has created the most problems where employers have begun setting higher minimum skills requirements and are increasingly hoping to attract more able and highly skilled recruits. The nature of the image problem faced by some food processing companies was summed up by two respondents:

> *'Working in the local food processing companies is seen very much as last resort occupations. There is a history of food processing in the area and most students in the town have worked in the industry at some point. The perception is "been there, done that and will never do it again". Factory work is seen as unpleasant, smelly and hard work. The environment has now changed. There are better amenities and facilities . . . but the perception of the industry is so deeply rooted.'*

> *'This is a very unattractive industry to work in. The image is cold, wet and smelly. There is the idea that stocks are going down and therefore there is no future. It's seen very much as a last resort job.'*

Often in association with this poor image, turnover in these industries had traditionally been high and organisations were having difficulty attracting and retaining the better employees, with the most potential. Poorer terms and conditions of service had aggravated the situation, as well as the working environment. The problem with this was that it was stated to have led to a self perpetuating circle of low pay and status, high turnover, lower internal investment in staff, and so on.

> *'There was a tradition of no qualifications and low pay. Process operatives had to work very long hours to bring home a decent*

salary. We no longer believe anyone can work an effective 70 hours per week.'

'Employers would increasingly like process workers to be motivated and to show initiative, but if employers want all this they need to pay more. Some employers pay good wages, but generally pay is below average. . . . There is a difficulty for companies investing in training due to the high turnover of staff. But if employers invest more in staff this may increase their loyalty to their employer.'

In contrast to this situation, many of the chemical employers did not suffer as readily from such problems. This was especially the case where the processing work was more highly skilled and better paid. In such cases, turnover was often lower, there was a higher proportion of long serving staff, and employees were said to view the work as 'more desirable'.

5.2.2 Local labour market problems

Some processing organisations were experiencing difficulties in relation to local changes in the economy and demographics. Since many of the processing companies contacted have traditionally tended to draw most of their labour supplies for process operative jobs from local labour markets, they were quite sensitive to changes in the condition of these markets. For instance, a number of organisations were experiencing high levels of unemployment locally. This was said to create difficulties because it meant a larger number of applications usually had to be processed in each recruitment round. The generally low-skilled base of much of traditional processing work attracted more applicants. However, many of these unemployed individuals were not thought to be appropriate and much time was consumed having to sift through them. The problems were reported to be most acute in areas of food processing, such as the fish industry, snack foods, biscuits and frozen foods.

Some unemployed people were said to be only applying 'to keep the government off their backs' and were not really interested in work. Others, such as graduates and those with 'A' levels and numerous GCSEs were said to be too academic. They were not disclosing their qualifications because they just wanted to secure some form of employment, but this created problems in the long term for employers who took them on. Such qualified individuals only usually stayed for a short period in low skilled

processing jobs. Therefore, it often was not long before employers had the additional expense of recruiting and training again.

Other unemployed people were thought just not to have the 'right' attitude.

> *'There are a lot of people out there who are unemployable and who no company would employ. There are a lot of homeless people on a downward spiral. There are a lot of people out there untried who would not be right for us because of their attitude.'*

However, employers did not always perceive unemployed people with prior experience in the industry as an advantage. Indeed, those who had worked in the industries before were often seen to be more problematic because they could not adapt to the new practices.

> *'Also* [ex-employees] *will not try to apply factory standards required by the . . . industry. No-one will tell them they cannot smoke and have to wash their hands.'*

5.2.3 'New' skill requirements

Many of the recruitment difficulties experienced by employers in the processing industries were associated with changes in the nature of processing work. For instance, changes in health and safety regulations, and codes of practice regarding hygiene, have tended to increase the amount of paperwork and administration within processing jobs. Meticulous record keeping and incident reporting is now even more essential. Some employers have found difficulties identifying individuals with an adequate level of basic literacy and numeracy to undertake these sorts of tasks. This has been more of a problem among some younger recruits.

> *'We have difficulty with literacy: 15 and 16 year olds are incapable of writing a short report and filling in an application form. We blame the teaching methods in schools.'*

In addition, where employers have been encouraging process workers to take on more engineering skills, and/or to move into more specialised quality control areas, this has also created some recruitment difficulties. Local communities may be able to provide people with the capabilities to undertake basic processing work, such as machine minding. However, there are more

problems finding people who will be able to expand into these broader areas of machine maintenance, servicing, instrumentation and quality control. Such work generally requires a higher aptitude and a much wider range of skills and knowledge, of which there is not (in local labour markets) automatically a ready supply. This problem appeared to be accentuated in some areas where unemployment levels were higher.

> *'We have difficulty with engineering because there is just not the skills base. There is a high level of unemployment locally.'*

5.3 Skills gaps in the existing workforce

Most of the skills gaps and shortfalls identified by respondents among their existing processing workforce were closely linked to 'newer' skills. They were hence associated with changes in the nature of processing work. Some of these skills gaps did appear to be causing fairly significant problems and employers were having to work quite hard to alleviate them.

5.3.1 The right attitude

Arguably the biggest problems employers were confronting with within the existing workforce, and probably the hardest to resolve, related to a lack of desirable employee attitudes, and the nature of their innate qualities and personalities.

> *'There has been some attitudinal resistance. Usually with any change you start to implement, about 12 per cent are really enthusiastic, 12 per cent are against and the remainder are undecided about it and could go either way. You have to work to win the remainder round.'*

As some of these attitudes are so ingrained, they are often the hardest to influence and change, yet they may have a huge control over employee behaviour and performance. In particular, they can restrict an individual's willingness to develop and/or take on new skills. Chapters 3 and 4 have shown how important the right sort of attitude has become to employers in many processing companies. Given that the opportunities for expansion and change have been already so extensive in processing work and are likely to continue, employers have been more particular about the attitudes they have sought among their process workers. In short (as already shown in Chapter 3), this has

included: a willingness to adapt and to learn; to be flexible; to assume more responsibility; and 'to willingly take part in the success of the business and making business success'. In addition, employers have wanted process workers to be receptive to new work systems and new technology. However, when in contrast employees hold more traditional, inflexible attitudes which resist change, then this can create greater management difficulties for employers. As one respondent explained:

> *'We try to mould employees' behaviour rather than train because you can change behaviour but personality remains the same. Some people, usually the 'old school' types, just won't change.'*

Many organisations, attempting to change, were therefore having to spend some time challenging and overriding some quite deep seated and long-running values, cultures and attitudes. The problems created by out-dated attitudes have been the most marked in those processing industries located on brown field sites, characterised by a long history, low labour turnover, staff with long lengths of service, and in many cases, strong union traditions. In some instances, where trade unions were well organised and could collectively represent their members' interests, and influence the management of change, the difficulties seemed be accentuated.

> *'The obstacles are time and union pressure. . . . the union feel they can negotiate more money on this issue.'*

The difficulties were also aggravated because many of the process operatives had not been specifically recruited for the new areas of processing work. As such, attitudinal resistance stemmed from insecurity and the fact that individuals lacked the aptitude and/or potential to develop.

> *'We are starting to train our process operatives to cope with change but we are not always successful because the attitude, aptitude and overall culture of people is wrong. They are not flexible enough and very cynical of change. As they are older they do not see much future in changing.'*

It was also because they had been doing their traditional job for so long that they simply found it almost impossible to adapt to anything new. They simply found it hard to adjust to a new way of thinking and working. They thus appeared to be inhibited by time and the fact that they were just not used to change.

'They have done the jobs for so long they find it hard to do new things. It's not necessarily because the new things are of higher skill level but they are just different.'

Managing attitudinal change

Organisations were coping with attitudinal resistance in different ways. Some were taking a fairly hard-line approach and implementing measures to remove the most resistant employees from the company. This usually took the form of voluntary or enforced redundancy programmes.

'Those made redundant were the lower skilled, and lower in attitude.'

The need to reduce the number of process workers through redundancy often came about through the implementation of new technology and working practices. Having decided to pursue the redundancy route, some employers were then employing 'attitude' as one of the redundancy selection criteria, and hence using it as a means to remove those with 'unsuitable' attitudes. Attitude was commonly used, along with other things such as length of service, qualifications, job performance and an ability to team work.

'Qualifications are only one criterion. Attitude is the most important.'

Redundancy programmes were often being implemented as part of a much broader cultural change programme, in which traditional attitudes and ways of working were gradually being challenged.

'We require much more skilled people. . . . Some of the process operatives we had to get rid of. . . . We need a very flexible workforce who are able to relieve each other, so they demand a higher skill level. The instrumental worker does not exist any more. All staff should know now what the company stands for, their goals, what they want to achieve, their product range and the values of the company. The cultural change has been from "working for money" to "working for the company and being proud to do so".'

In some companies, the selection process for redundancy was quite sophisticated and involved the application of psychometric tests, specifically designed by an outside consultant. These

tested attitudes as well as mechanical and technical ability, and those existing employees that did not pass the tests 'had to go'. The tests were also to be used in the future to make recruitment processes more systematic and reliable.

Redundancy was not the sole or only way of managing attitudinal resistance. Some processing companies were simply forging ahead with change and expecting employees to comply. The key to their approach was persistence. This 'persistent' approach was frequently associated with those employers which were trying to break down traditional job demarcations and to implement more flexible working and multiskilling. As such, they were encouraging process workers and engineers, for example, to interchange certain roles and to work generally more closely alongside each other and/or in teams. Employers believed that if they were persistent and continually kept enforcing, communicating and implementing the sorts of changes they desired for long enough, workers would eventually have to accept them. This was either because they would realise they had no other choice, and they either accepted change or left, or because they would be made to realise that the changes were perhaps not as bad as they first thought. Part of this communication process was thus also dependent on convincing the employees as to why it was so necessary to change:

> *'The way we got them to accept change was through attrition. That is, we kept on wearing them down until they started accepting change. We had to show them that change was driven by competition.'*

> *'There was some resistance from the unions at first, particularly the engineering unions, but they eventually realised there were benefits in making changes and complied with changes. Engineers could be, for example, freed up to do more sophisticated work.'*

There were, in addition, other ways of managing change, and in particular employee attitudes. A number of employers, for instance, accepted that it would not be possible to change everybody in the ways that they wanted, and hence to implement an all encompassing change programme. Such a programme was seen not only to be quite a difficult goal to achieve but could potentially prove to be very costly in terms of time and resources. This was especially so if attitudes were very ingrained. In many organisations, therefore, changes in processing work were being implemented incrementally and more gradually. As such, only the most able and receptive process workers with the 'right'

attitude were being expected to change. In the transitional period, there were examples of creating some jobs for those unable to adapt to the changes.

> *'There were some hard graft jobs on some of the plants. We no longer have those jobs. We had to create a few square holes for some square pegs'.*

They thus recognised the differences in attitudes among their employees and worked within these limitations.

> *'The routine tasks can only be passed on to those who ask.'*

> *'The new jobs require a higher level of skill. People who wanted the new jobs were asked "What do you think the job will entail? Why do you think you can do it?" People need to show an aptitude to develop for the new jobs. The majority of people here are happy to stay in their set jobs. They wouldn't see their job as a career so wouldn't be suitable.'*

> *'It's the older, long serving people who are really against change. The young people are happier to make changes.'*

> *'If this was a greenfield site it would be easier because you can take people on with higher and necessary skills. When you are a brownfield site you have to work within the constraints of what you've got and to make the most of some of the existing staff.'*

While this is undoubtedly not an exhaustive account of ways in which employers are attempting to overcome attitudinal resistance, it highlights some of the common approaches employed by the organisations contacted in this study. Many clearly still had some way to go in terms of achieving their ideals.

5.3.2 Personal skills

In addition to attitudinal problems, employers also highlighted other personal skills and qualities which were lacking or weaker among their processing workforce. Many of these related to the new areas of softer skills mentioned earlier (Chapters 3 and 4), such as communication, problem solving and diagnostic skills, and showing initiative. These gaps and weaknesses were more acute where process operatives were beginning to work in teams and to take on more management responsibilities. This was either under the direction of a team leader or as a 'self-managed' team. One general area of difficulty related to managing people:

'Interpersonal skills are a major skills gap. This is especially among team leaders and their ability to handle people.'

'Taking responsibility within a team has been a very hard thing to adjust to. Deciding how to manage staff cover and absences and how to develop a fair rota requires making a decision. They find this very difficult. In the past this wasn't expected. The line manager could help.'

However, there were also problems in relation to more specialised activities of the team, such as diagnosing specific processing problems, and suggesting ways to improve working practices and prevent them happening again.

'Process operatives know what to do and when, but not why and how they could do it better.'

'Problem solving is an area we need to concentrate on. We need to get process operatives to operate more as a team, to recognise symptoms, go through cause and effects, and come up with solutions.'

Some of the skills shortfalls were less widespread and more individual to specific organisations. They often tended to reflect quite particular problems experienced by the nature of that organisation, for example, where they had suffered from a poor image and high labour turnover. In these situations, management problems had been accentuated by high levels of absenteeism and poor timekeeping skills among staff. The traditional culture, poor working conditions and the 'rule by fear and control' style of management had also undoubtedly contributed to the situation:

'We have a big problem with absenteeism. The average across the site is ten per cent. The problem is particularly acute in chilled prepared food products, where it is running at 15 per cent.'

Employers seemed to be recognising the difficulties process workers were having in these areas, and were trying to resolve them through training and on-line support. Attempts to rectify the problem were also being undertaken through modifications to recruitment and changes in methods of working, styles of management and the organisational culture. However, it was anticipated that it may take some time to overcome these traditions. In some cases, it was realised that process workers may need a little time to adjust to their new roles.

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5.3.3 Technical skills processing

Where change in the nature of processing work is requiring process operatives to take on new, more varied and advanced technical tasks, this is also leading to problems. Some employers, for instance, have noticed skills gaps among existing staff who are required to use quite sophisticated technology and to operate new process controls systems. These systems are known to demand a more detailed technical and/or chemical knowledge of the stages of the production process itself, and/or details about health and safety matters and hygiene, than process workers required in the past. More skilled areas of engineering maintenance work, such as machine setting, dismantling and assembly, and instrumentation work are also causing problems in some instances. This has not only been identified in our own research but more widely (BCCCA, 1996).

These problems have been more acute where the existing staff pool has a lower skill base. This is particularly the case where many employees have had a long length of service with the same company, and thus may have been originally recruited some ten or 20 years earlier for quite a different processing job, for example, as an unskilled general labourer.

As more complex machines and/or areas of work are said to require higher levels of skills, even if there is the 'right' attitude among existing staff, there is often not the necessary aptitude to take on these additional responsibilities.

> *'There have been some problems. This has mainly been with some process operatives acquiring engineering skills. Ten to 12 per cent failed engineering standards/tests first time and had to be put through again. Most engineers have found it easier to acquire processing skills than the other way round. This is thought to be because engineers have wider engineering skills to start with and broader initial training from their five year craft apprenticeship.'*

> *'Only 25 per cent of processing people have been able to take on the engineering tasks.'*

> *'We have a very elderly workforce. In the '70s we took people in their 30s and 40s. The elderly people find it harder to pick up the new job skills, especially the new technology. I had someone of 61 ask me if he could have a go, but it's too late then to try and learn.'*

Managing technical skills

In many cases, to cope with this problem, employers are having to select only the most able process operatives to take on work in these more advanced areas. Where the existing workforce cannot meet their increasing skill needs, they are having to recruit suitable individuals from the external labour market.

Some employers are also managing any mismatch in technical skills among the current processing workforce by restricting the level of new engineering maintenance and/or quality control tasks, to the more routine and basic aspects of work.

> *'The new maintenance tasks for the process operatives have been kept to the routine oiling and things. It's generally the lower skilled engineering tasks.'*

This has the advantage that it may not challenge or undermine the more specialist roles of the remaining engineering workers.

> *'In primary production . . . we still need specialist fitters so we are working more to blur the edges between operators and engineering personnel, with operators taking on little bits of a fitter's job.'*

It also has the benefit of freeing up the engineers to do the most sophisticated engineering jobs. However, despite these attempts to override technical skills gaps, some employers still have concern that there may be quite severe skill shortages in the future. This is especially if changes and advances in processing work continue at the same rate, or indeed increase. From this viewpoint, it follows that employers will have to expend more energy recruiting able workers, and designing training programmes to develop people and ensure they are prepared for process work in the future.

> *'There is also a current problem with an ageing population. In the future, more people are likely to meet retirement age. As we have not been recruiting, we may not have anyone appropriately skilled to replace them.'*

The evidence has thus shown that while some employers appear to have gone some way in transforming the nature of process work, many are clearly some way from completing the change process. There are obvious areas of skill development that attract the attention of employers, and some problems that still need to be overcome in managing this change process.

5.4 Summary

This chapter has attempted to shed light on the nature of any difficulties experienced by employers recruiting from the external labour market, and skills gaps within the existing workforce. These are two areas which can potentially work to inhibit employers at a time of continual change from recruiting, retaining and developing a processing workforce with the necessary skills and abilities to undertake processing work.

The study found that as recruitment has tended to be low among many of the processing organisations, recruitment difficulties were not abundant or causing major problems. Where there were difficulties, these seemed to be experienced by the food and drink processing industries and related to the legacy of a poor traditional image. Many of the most common recruitment difficulties and skills gaps identified by respondents were closely linked to 'newer' skills, and hence associated with changes in the nature of process work.

In contrast to the recruitment difficulties, some of the skills gaps were causing fairly significant problems, and employers were having to work quite hard to alleviate them. Three types of skills gaps were identified. These related to attitudes, and personal and technical skills. To override these skills problems, a number of practices were being adopted. These included: redundancy (*ie* removing unsuitable attitudes from the organisation); training and development; recruitment and selection (*ie* bringing in more people already equipped or with the capacity to be equipped with the new skills); and cultural change programmes (which might use training and recruitment as part of it).

6. Training and Development

6.1 Introduction

British employers have traditionally had a poor record in training and development matters (Keep, 1989; Keep and Rainbird, 1995; Rainbird, 1990, 1994; Ashton and Felstead, 1995). Indeed, Britain has frequently come near the bottom of any international training comparisons. Some more recent research (for example, Felstead and Green, 1993; Ashton and Felstead, 1995) is thought to have identified the beginnings of a break with such traditions in training. However, within some industrial sectors in Britain at least, it is hard to say with any real certainty how widespread this is, or indeed whether it is a trend that is likely to continue. The situation is confused by the fact that data regarding training is not collected regularly in a systematic fashion and training is often hard to quantify, particularly if it includes on-the-job training. In addition, any variations in the extent of training identified may only be due to methodological differences in how the data has been collected, or variations in what employers and employees actually perceive to be training (Rigg, 1988; Campanelli and Channell, 1994; Rainbird, 1994).

Against this changing national picture, it appears that many employers within the processing industries examined in this study, have started to modify and develop some of the training they provide to process operatives. Much of this seems to be in the light of changes in the nature of processing work, and how it is undertaken and organised. Hence, training developments have been in response to key drivers of change such as the use of new technology and new ways of working. As such they have related to what some term 'softer' aspects of the job, such as teamworking, communication and problem solving, as well more technical skills and knowledge.

As change in the workplace becomes ever more frequent, some employers are beginning to place more emphasis on the notion of lifelong and continuous learning and development. With this, their main aim is to provide training continually throughout the course of an individual's career and to update and/or renew skills in response to changing business requirements. It thus appears that as organisations espouse the need to develop 'multiskilled' process workers, many of them also believe, in theory at least, that there is a dual requirement for more training among the processing workforce. This emphasis on continuous training has mirrored developments in training more generally within industry (eg Rainbird, 1990; Edwards, 1993). However, while developments in training are apparent, they should be viewed in context. There is some variation in the extent to which training practices are being reviewed across the industries, the sorts of training actually being adopted in these organisations, and exactly how such training is being applied. Indeed, many organisations still appear to be in the early stages of adjustment and change.

This chapter attempts to shed more light on these issues by exploring the types and amount of training being delivered in the sample organisations contacted. It considers:

- the nature of induction and initial training for new recruits
- what forms of continuing and on-going training is provided once this initial training has been completed.

6.2 Training of new recruits

6.2.1 Induction

All organisations in this survey provided induction training programmes for their new recruits. This was undoubtedly due to the importance of health and safety, and hygiene matters within these processing industries. Every organisation had basic statutory requirements to meet and minimum standards of production. These essentially precluded any employee stepping onto the factory floor without some form of prior training. Most of the inductions varied from a few hours to several days and included, in no particular order, a number of common things such as:

- an introduction to the company, its structure, business approach, values and mission. This would also probably cover basic information on the business performance and the range of products sold.
- the contract, terms and conditions
- training in health and safety, and hygiene matters
- an introduction to the department or processing section where the new recruit was to be working. This usually involved meeting managers and other work colleagues, hearing about work systems, what exactly the individual would be required to do and how they would fit in.
- any rules and regulations regarding, for example, security, discipline and such like
- lines of communication and responsibility, and
- information about any individual job routes, the nature and type of training to be provided, methods of monitoring and assessment.

As well as being similar in broad content across organisations, the induction was most likely to be delivered and directed by similar types of people. These generally included personnel and training managers, health and safety representatives, and/or the recruit's line manager.

6.2.2 Initial training

Rather than standing alone, the induction was often incorporated into a much wider initial training programme. As such, it would not always be clear to a new recruit when one ended and the other started. The following section explores the nature of this training in more detail.[1]

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[1] It should be noted that the initial period of training has been hard to define. This is because many respondents used similar terms to describe quite different things. We have taken 'initial training' to mean the period of fairly continuous training undertaken by a new recruit, running from the time at which they were appointed, to becoming a competent process operative, trained in 'essential' processing skills. In contrast, continuous and on-going training was taken to be any additional or supplementary training provided after the initial period.

Content

In terms of content, much of the initial training provided was technical training, which was closely related to the nature and type of equipment and/or machinery the recruit was required to use and/or operate. In other words, it initially focused on teaching 'the bare essentials to do the job'. However, in addition, process operatives were also commonly given a certain amount of 'process' knowledge training in this initial period. This was so that they would at least understand the basics of the production process in which they were partially or completely involved.

The precise content of the training programme tended to depend on the nature and grade of the processing job that an individual was intending to undertake. Thus, lower grade and lower skilled process jobs usually required less training in detailed scientific and process knowledge to back up their technical understanding. This was because these sorts of jobs were constrained to a narrower range of tasks, or involved operating a smaller number of machines, within a smaller part of the production process.

> *'At the higher levels it is important, for the process, to develop their science background.'*

Duration

The period of initial training varied considerably in length. In some instances it only lasted a matter of days and was quite limited.

> *'The basic operative here is taught and proficient over two shifts which is about eight to 12 hours. I mean, how long does it take to watch tins go by and put lids on them, or to press a button when the bell rings? . . . It's not rocket science.'*

> *'The formal training lasts about 14 days in total. It's a mixture of off-the-job theory and on-the-job practicals.'*

However, where the initial training formed part of a more structured programme of training and development, the training process could last for up to two years. Then it was quite detailed and involved.

> *'In the past three months on the plant, doing the job was often enough to learn the basics. . . . workstations are now more*

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complex. Now it takes two years to get up to the required competency standards. Its a continual learning process. . . . In 18 months to two years, a new process operative is expected. . . . to be able to start up, run and close down the plant.'

Longer periods of more structured training were increasingly being linked to the attainment of accredited qualifications such as NVQs/SVQs (this is explored more fully in Section 6.5). Also, they were more common in the chemical sector in particular.

Variations in length generally depended again on the nature and grade of the processing job that the recruit was moving into, and the capabilities of the recruit themselves. Thus, for example, lower grade and lower skilled process jobs required a shorter period of initial training and a lower level of aptitude. In some organisations, the least skilled process operative jobs could be acquired very quickly with minimum training and skill. This was true especially where operatives were working at one point on the production line or undertaking general labouring jobs, packaging work, and day-to-day tasks around the factory.

However, at the other extreme, for those who were more able and aiming to undertake more highly skilled processing jobs, training was likely to be longer and more involved. This was especially so for jobs such as operating, for example, a range of quite sophisticated machinery through computerised process controls. As most process workers start at the lower levels and work their way up, training generally had to begin with the basics and then progress up to the more sophisticated work at higher grades. This was so that an individual could gradually build up their knowledge and expertise. It was usually for these more skilled and complex posts that training was likely to take up to two years.

Modes of training

Most of the initial training provided was on-the-job and fairly company specific. In the more organised training systems, one manager usually assumed responsibility for the training of each recruit. In most instances, this was the recruit's first line manager or supervisor who worked with them and monitored their work on a day-to-day basis. In some cases it was a specific trainer or personnel manager with responsibility just for training matters. These managers, as well as directing them through the necessary training route, often actually undertook and delivered the

training themselves. Alternatively, or in combination, a new recruit might be expected in some areas to learn the job through work shadowing, where they were trained by watching and imitating a fully trained process worker.

'Traditionally much training has involved "sitting with Nellie".'

Although perhaps less substantial, there was also commonly an element of off-the-job training, which was generally provided in a training centre, at a local college, in a laboratory or a simulated workstation. This was usually conducted to familiarise and teach individuals about the more theoretical and technical parts of the job. It may also be related to specific training in official matters such as health and safety, and hygiene.

6.3 On-going and continuous training

Many processing employers were increasingly emphasising the importance of continuous learning and development to supplement any initial period of training. For many processing jobs, training was being seen as on-going and something which would be undertaken regularly throughout a processing career. Indeed, many respondents, in line with continual changes in work organisation, technology and practices, were recognising the need regularly to update the skills of their process operatives. Training was also frequently used to refresh skill areas which may have fallen into decline due to lack of use. While it is arguable that training had been used in this way in the past, albeit to a limited extent, there did seem to be a difference in emphasis. Thus, in theory at least, more employers were aiming to deal more proactively with training. As such they wanted to ensure in advance that more of their employees were prepared for changes in the future, rather than considering training in a retrospective and reactive fashion. In addition, they appeared to be trying to target training to fulfil actual needs, instead of taking a blanket approach and applying all training to everyone. At the same time, some employers were also looking more to the employees themselves to take an active interest in learning and to assume more responsibility for enhancing their own personal development. In the light of these developments, the content of some areas of continuous training also appeared to have changed.

6.3.1 Content

Much of the continuous training was in technical areas of work and thus related to specific changes in the nature of the processing system, practices and/or the technology being used. For instance, many organisations appeared to be moving towards computerised processing and control systems and had introduced quite specific training programmes to equip selected process workers to operate such equipment. They had also often implemented quite general IT training programmes to reduce the 'computer fear' element among their process workers and to improve the overall computer literacy in areas such as word processing, spreadsheets and e-mail.

In other areas where the job boundaries of process operatives were changing, many workers were having to learn a greater range of processing tasks. Alternatively, they were being trained in new technical areas such as aspects of engineering or quality control. Also, it had sometimes been necessary to update processing skills and/or knowledge for some workers. This was necessary where there were changes in the nature of the production process itself and/or the products being prepared.

In association with changes in more general business practices and the implementation and development of cultural change programmes, some organisations were also providing a degree of training in general business matters and awareness. This often included:

- information about the company's visions, values and mission
- details about its business performance, the range of products sold and customers.

This information was increasingly believed to be important where process workers were also taking on additional responsibilities for decision making regarding their jobs, the production process and general processing issues.

However, training was not restricted to technical knowledge. There also seemed to be quite a lot of training in softer skills. This most commonly included training in areas such as teamworking and group dynamics, communication and problem solving. This was deemed necessary to help process operatives to meet changes in the nature of processing work and to enable them to communicate more effectively with other workers.

These included chemists, engineers, quality assurance staff, managers, and so on. For the higher level processing jobs like team leaders, where responsibilities had increased, this could involve training in broader areas. These might involve decision making, leadership and supervisory skills, staffing and people management.

Mode of training

Continuous forms of training were provided in a variety of ways and could be delivered:

- internally by supervisors or fully trained employees, and through internally run training courses
- externally through colleges, external consultants and/or through distance and open learning programmes
- on the job, (*eg* through work shadowing and direct instruction)
- off the job in training centres and/or simulated workstations.

For example, the training for employees introduced in association with new computerised processing systems were often delivered by external consultants. These were employed specifically to help with the implementation of the systems. Consultants often provided a mix of on the job and off-the-job training. They could also support process operatives on-the-job for a time, as they tried to put theory into practice. In contrast, technical training was more frequently provided internally by supervisors or fully trained process workers and craft engineers. This occurred particularly in areas of processing and engineering where the expertise and knowledge was already at hand. Although most practical aspects of technical work were provided on the job, the more theoretical elements were often provided elsewhere in training centres or colleges. This college training involved working towards recognised qualifications such as GCSEs, NVQs/SVQs, ONCs and/or HNCs, and the like. Areas of softer skills training were provided in a broader number of ways and included:

- internally run courses provided by personnel and training departments
- external programmes delivered by consultants, off-site at hotels and through outward bound training courses
- college-based training often geared at attaining accredited qualifications such as the NEBS supervisory qualification.

6.4 On-going assessment and appraisal

Although not all employers had formal appraisal systems for assessing their processing workforce, most organisations did have some form of regular performance review. The most rigorous approaches to appraisal required process workers to meet regularly with their line manager at set times and to take part in quite a structured discussion. This was generally guided by detailed competency frameworks. All outcomes from the meeting, such as strengths and weaknesses, training needs and performance targets, were carefully documented, as indicators for action and as a basis for future discussions. At the other extreme, the appraisal involved more informal meetings between a process worker and their line manager. These could often vary in frequency and content, and may only be broadly focused around issues of individual performance, and training and development. The appraisals also varied in terms of their frequency. While most formal appraisals were annually based, some were more frequent and held, for example, every quarter.

However, appraisals were not the only way of assessing employee performance. Many organisations also monitored much of the development and progress of their process workers on the job. This was conducted either in addition to the appraisal process or instead of the appraisal. Broadly, there were fairly similar systems for monitoring the progress of different employees, and recording the training that they had completed with the company. Generally, each individual seemed to be issued with some form of personalised training log or record which was intended to precisely catalogue the rate and nature of their personal development and progress.

Under these systems, the training assessor would record when each individual had completed the prescribed training in a task, or group of tasks, at a specific stage or grade, and proved themselves to be competent. Only when an individual had passed all the necessary stages of the development process would they be deemed to be completely proficient at that level. The time taken to become proficient as a process operative varied from a few days, for the least skilled jobs at the lowest grades, to a couple of years for more highly graded, sophisticated and specialised aspects of processing work.

6.5 Accreditation of training

In many organisations, the training of process workers was increasingly being related to the attainment of accredited qualifications such as NVQs/SVQs. This was especially the case in the chemical processing industry, where these qualifications had been available in an 'off-the-shelf' form, which employers could immediately apply, for a longer period of time. In most cases where NVQs/SVQs were recognised, this was linked to quite a structured programme of training and more clearly developed career structures or pathways for process workers. Thus, in the first six months of initial training, individuals would be expected to attain the NVQ Level 1. In the next 12 months, they would work towards NVQ Level 2, and so on. In some cases, these qualifications were a condition of continuing employment. For the youngest process workers in the chemical processing industry in particular, the qualifications had often been implemented as part of the Modern Apprenticeship programme. This tended to provide concentrated training for a period of four to five years on and off the job. These were increasingly geared towards the idea of a flexible and multiskilled process worker. As such, they were intended to provide formal training in aspects of electrical, mechanical and instrumentation engineering and quality assurance, as well as processing work. While various employers within the food and drink processing industry were planning to use the Modern Apprenticeship scheme, they had at the current time been inhibited by the rate of its development and general release.

There were a number of reasons broadly cited by employers for becoming involved in the occupational standards/NVQs. For instance:

- many employers felt that the framework for the occupational standards formed a very useful form of training needs analysis. Thus, it provided a structure for identifying any skills gaps or shortfalls among the workforce, and set skills targets to work towards. As such, the framework served to improve business and industrial standards.
- Some liked the fact that the NVQs could be tailored specifically to suit their processes and to provide essential on-the-job competences. Unlike a more standardised or academic exam syllabus, such as the traditional City and Guilds 060 qualification for process workers, it was said not to require 'learning parrot fashion' lots of areas that were not relevant to the company.

- The NVQs also offered room for flexibility and provided the opportunity to work for modules across traditional job boundaries between, for example, processing and engineering.
- The qualifications could also provide an important incentive for employees and, once attained, could serve to improve worker morale, satisfaction, motivation, and company loyalty and commitment.
- Others believed the framework for the occupational standards and NVQs also offered added advantages in terms of satisfying statutory industrial regulations. As important hygiene, and health and safety, requirements were incorporated into the framework, this assisted those employers working to the standards to meet their statutory obligations.

However, there were a number of employers who had not taken up the qualifications. This was for a number of reasons:

- Some were still evaluating their usefulness and feasibility.
- Others felt the qualifications were largely too bureaucratic and would take up too much time and effort to administer.
- Some had not adopted the qualifications because they had already developed their own skills and training framework, and had not yet decided whether it was worthwhile to try and incorporate the NVQ system.

Some of these employers questioned the breadth and/or depth of the underpinning knowledge of the current NVQs. They preferred their company frameworks and training systems, which they felt went beyond the one for the NVQs. This was particularly true in the most technical and scientific areas, such as engineering and computerised process controls. These employers believed that changes in technology, organisational structures and working practices were requiring more of process operatives, in terms of responsibility and processing knowledge, especially at higher grades. To reflect this change, it was felt NVQs needed to become more theoretical and academic as well as competency based. To meet this shortfall, many of these employers were combining the NVQs with other qualifications, such as BTEC courses, the City and Guilds 060, and GCSEs.

6.6 Internal movement and progression

The typical career pathway for process workers was found to be quite short, ranging from one or two grades, to four or five at

most. Varying grades and levels of processing work have been broadly developed on the basis of factors such as skill levels, the number of machines operated or processing functions undertaken, and processing and/or machine complexity. Thus:

- **the lowest grades** in many cases involved unskilled ancillary work, such as general cleaning, unloading and organising of stock and raw materials, packing and dispatch, and general labouring work, organised around the main production process.
- **the higher grades** above this broadly existed at different stages of the processing cycle. The most skilled jobs usually involved more responsibility, and the operation of the most sophisticated and complicated machinery. Process control operators and technicians, and team leaders with management responsibility, were among the most skilled and highly graded processing jobs.

The food and drink, and chemicals processing industries appear to have traditionally favoured promoting and developing people from within. Indeed, it seems that as processing knowledge and training has always tended to be quite company specific, most people who have entered processing organisations have done so at the lowest levels, and then worked their way up through processing grades. As a result, the most senior processing managers, supervisors, charge-hands and the like have tended to be those individuals who have moved up through the ranks. Consequently, these have commonly had a longer service with the company and time to acquire more detailed and specific processing and company knowledge. This appears still to be largely the case. Many organisations continue to emphasise the importance of promoting the internal labour market.

Furthermore, within processing work, there has been more of a tradition of having set grades and distinct processing jobs. Hence in the past, the number and range of jobs was said to be quite varied. While most processing workers may not have viewed their job as a 'career', and hence sought advancement, there have been opportunities for some to develop. Development has primarily been achieved by being promoted to new jobs at similar or higher levels as and when vacancies have arisen. Although the speed of progression in the past was constrained by the rate at which suitable vacancies were created, with a fairly large array of different processing jobs, there was believed to be more opportunity, at least in theory, to move and hence develop. However, in association with many of the broad structural, organisational and technological changes that have been taking

place in the processing industry, this situation has begun to change.

6.6.1 Changes in progression: fewer or more opportunities to progress?

Many employers report that the range, level and number of different processing jobs is gradually being reduced. This is particularly believed to be the case where:

- employers are increasing the flexibility of their processing workforce and broadening the spectrum of processing skills that operatives are required to have, and the tasks they undertake, and/or
- the number of supervisory and management positions has been reduced due to the effects of downsizing and redundancy.

As process operatives increasingly work across functions, on various machines and in different workstations, they are broadly moving towards one type of multiskilled and/or flexible process worker. This merging of grades is believed by some employers to be reducing the range and extent of development opportunities for this occupational group compared to the past. While multiskilled and flexible process operatives may not be undertaking exactly the same tasks, have precisely the same skills, nor indeed will ever be 'all singing and dancing operatives', they may require a similar level of skill, processing knowledge and ability. As such, they are expected to be broadly equivalent in grade. So this does tend to reduce the range of grades and levels. With technological and organisational change also working to remove or reduce distinct jobs, particularly at the lowest levels, this does also tend to accelerate this change process further.

> *'We no longer have people just there to sweep the floors, process workers clean up after themselves.'*

In line with such developments, in some organisations titles are beginning to change and process workers are becoming called technicians and/or process manufacturers.

However, while some employers feel that the number of opportunities to advance and develop may have been reduced, others believe that there are fewer constraints on the rate of progression compared with the past. This is because many of these multiskilled process operatives are being trained within modified

training programmes that are more structured and flexible. Under many of these more structured schemes, the job of a process worker is often broken down into stages on the basis of factors, such as the number of machines to operate, or processing functions to be undertaken, and so on. These training and development schemes are increasingly being viewed as a 'learning cycle' through which an individual can advance and progress according to their aptitude. These cycles can be long running, as seen earlier, and may last up to two years. To move within the learning cycle, an individual is expected to complete each of these stages within the training programme in turn. As an individual completes a stage and proves themselves to be competent, they may move on to the next stage in the cycle. These stages are often linked to the grading system and thus the level of skill required, breadth of knowledge and complexity associated with the job will often increase at each successive stage or grade. While all individuals may progress in the same broad direction, not all workers are always expected to learn every stage of a processing job or to progress to the highest grade. Indeed, usually only the most able process operatives progress to the end of the training programme.

The main development advantage of these schemes is that as an individual's progress can be regularly reviewed by their line manager, training can be more flexible and related more closely to the needs of the individual. This means that the rate and amount of progression is not just determined by business needs and changes in staff turnover. Development is also now more likely to relate to the capabilities of the individual, their inclination and desire to learn and advance, and the speed and ease with which they can acquire the necessary skills and expertise required under the training programme.

In addition, under these schemes, process workers need only undertake training that they deem to be essential to their work. This is in marked contrast to past training systems described by some as the 'scatter-gun' or 'bums on seats' approaches. With these traditional approaches everyone was automatically put through certain training courses, regardless of perceived need, and it was hoped that 'something, somewhere would sink in with someone'. The targeted approaches currently favoured in a few organisations are seen by many to be far more effective and cost efficient. However, whether this is indeed the case has been difficult to evaluate within the constraints of this study.

6.7 Summary

This chapter has attempted to shed light on the nature of training and development of process workers within the chemical, and food and drink processing industries. Whilst there is often some distance between theory and practice in terms of what employers hope for and espouse, and what is a reality, it appears that there have been some developments within training. Indeed, many employers have started to modify and develop training in response to changes in the nature of processing work, how it is undertaken and organised. Developments in training have thus related to changes in technology and ways of working.

Furthermore, some employers are questioning the sufficiency of initial training and placing more emphasis on continuous learning and development. This enables employees to more frequently update and refresh their processing skills, in the light of continual organisational changes. As such, employers are targeting training more closely to fulfil actual needs, instead of taking a blanket approach and applying all training to everyone, like in the past. Associated with this, employees themselves are being increasingly required to take an active interest in learning and to assume more responsibility for enhancing their own personal development.

Developments in training such as these are believed by some to have improved the internal development opportunities for process workers. This is because advancement and progression are believed to depend more on individual desire and aptitude. However, others feel that the combined effects of multiskilling, streamlining, flattening job hierarchies and redundancy are working to reduce both the number and range of posts, and hence development opportunities.

7. Conclusion

This study has identified considerable changes in the chemical, and food and drink, processing industries in recent years. As competitive pressures, both national and international, are increasing, processing organisations are having to seek ways of raising productivity and operating more efficiently. The nature of processing work, and the skills required of the traditional process worker, are slowly being transformed as the industries respond to these economic and business pressures.

This final chapter attempts to draw the research findings from this study together by:

- summarising the ways in which processing work is changing
- discussing the four key drivers of change
- focusing more on the challenges employers have faced in their attempts to change processing work. As such, it throws more caution on the discussion of change. Eight factors, influencing developments in processing work, are discussed.
- considering ways of managing and directing future change.

7.1 Changes in processing work and skill requirements

This research has noted considerable changes in the nature of processing work, and it is likely that many of the trends identified will continue in the future. While there is no one single role model to represent all process operatives, the direction of change across the processing industries has been similar. These changes in the work have required broadly similar types of skill. The following section and Table summarises these (Table 7:1).

Table 7:1 Changing roles and skills of process workers

Drivers of Change	New technology; new working practices; organisational restructuring or delayering; new business approach and corporate culture
Role Changes	Manual to conceptual work; more monitoring, interpreting, diagnosing and problem solving; greater process knowledge; flexibility and multiskilling; blurring of occupational boundaries; more decision-making: individually and within teams
Skill Requirements	**Basic skills**: numeracy and literacy **Other key skills**: IT skills; communication skills; team working and interpersonal skills **Occupation specific skills**: Technical understanding; engineering skills; problem solving; analytical skills; maintaining standards; administration and business awareness **Personal skills**: eg personal hygiene; flexibility; an ability and willingness to learn
Skills Gaps	Basic numeracy and literacy; teamworking and interpersonal skills; problem solving; technical and engineering skills; attitude to work

Source: IES, 1997

7.1.1 Rise of the conceptual worker

One of the main technologically driven changes to impact on process operatives has been a move from manually-based to conceptual work. This has meant operatives have generally become less involved in heavy physical, manual tasks.

The newer 'conceptual' role has:

- increasingly shifted towards monitoring and adjusting machines and instruments, watching for and resolving problems, visual inspection, and interpreting and processing data on screens. This has been most advanced in areas of process control.
- With the growing sophistication of technology, process operatives have required a greater understanding of the processes. This is not only in operating the machines but understanding how the process works if the machines break down, and if there is a problem, knowing how to resolve it.

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7.1.2 Changing working practices

Changes in the ways of working have essentially needed process workers to be more flexible about the sorts of work they undertake. It has no longer been perceived to be efficient to have people working on just one piece of machinery or one part of the production process.

Increasingly, employers have wanted process workers to take on a broader range of tasks and duties, with some, but not all, involving a higher level of skill.

Process operatives have been required to move into some areas of neighbouring occupations such as engineering maintenance and instrumentation, quality inspection, and chemical work such as on-line analysis. This has at the very least led to a blurring of occupational boundaries.

In the most advanced cases, operatives are becoming more flexible and/or multiskilled technicians, doing aspects of engineering, quality control and processing work. However, there is unlikely to ever be an 'all singing all dancing process worker' because the job is too varied.

New ways of working have also called for more teamworking. This has placed more emphasis on certain behavioural skills such as teamwork, communication and interpersonal skills. Process operatives now need to be far more aware of their environment, to know what is happening on their line, what happened in the previous shift, and need to talk to each other to keep up with work developments.

Teamworking and more flexible working is leading to more multiskilled and/or multifunctional teams. This is where the combined skills and abilities of all the team members produces the range of skills an employer requires. Hence, an 'all singing and all dancing' team.

7.1.3 Organisational restructuring

The introduction of new technology and moves to increase flexibility have enabled organisations to considerably reduce the size of their processing workforce.

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Downsizing, and the removal of layers of management, has led to the devolvement of management responsibility to process operatives. Employers are increasingly requiring operatives to make more decisions for themselves about:

- staff management
- improving their work
- hygiene, health and safety, and
- the quality of the products they are producing.

As organisations increasingly move to cellular and team-based forms of working, these responsibilities have had to be undertaken as part of a team, pointing to the need for more 'collective' thinking and problem solving as a group.

7.1.4 New business approaches and cultural change

New cultures have not only impacted generally on new ways of working in organisations but have broadly created new responsibilities that many process operatives never had before.

Operatives are now increasingly required to:

- monitor the quality of products and their work themselves
- show an interest in their work, the company and its market, and suggest work improvements
- ensure the highest standards are maintained in the workplace and for its customers
- have awareness of the business.

7.2 Drivers of change

There have been a number of common factors driving this change process. These have included:

the introduction of new more sophisticated technology. With advances in technology, particularly process controls, different parts of the production process have become integrated and controlled by computer. This has meant more machines are actually run by other machines.

the implementation of new ways of working. Employers are requiring more flexible ways of working that enhance

business success, efficiency and productivity. Organisations are therefore moving to cellular and team-based forms of working where employees can work more effectively together both within and across different functions.

organisational restructuring. This has generally involved implementing major redundancy and streamlining programmes, particularly in labour intensive areas such as administration and middle management. Flatter and leaner structures have been intended to make organisations more dynamic so that they can respond more effectively to the needs of the customer and the market.

the establishment of new corporate cultures and approaches to business. This has been in response to competitive pressures and legislative changes, promoting health and safety and hygiene. Through new cultures, employers have aimed to enhance business success by developing philosophies based around things such as total quality of goods and services and a customer focus.

7.3 Factors affecting change

This research has indicated that whilst the broad direction of change in processing work may be similar, there is some variation in the extent of change by organisation. This is undoubtedly because employers have responded to business developments in a variety of ways and faced different challenges. This section examines some of the challenges employers have faced in this study. It is not intended to be an exhaustive list, but rather as a means of showing what factors may be inhibiting developments in processing work more widely within the processing industries. The factors considered include:

- the existence of skills gaps and recruitment difficulties
- the extent of technological advancement, and training and development
- the prevailing management 'team' and approach
- the nature of the organisational structure and balance of employee skills
- a lack of clarity in the organisational approach to change and management practices.

7.3.1 Skills gaps and recruitment difficulties

Many respondents within this study have suggested that moves to more sophisticated and technical processing work are increasingly demanding both a broader range and higher level of skills from process operatives. However, there are some areas where skill gaps were reported and respondents were having difficulties attaining the necessary skills among their workforce. This was especially the case in the most advanced organisations, where developments in processing work were more marked, and operatives were being expected to take on broader responsibilities and skills.

Skills gaps related to technical skill areas such as engineering, and personal skills and attitudes (Table 7:1). For instance:

- Strong resilient attitudes, in particular, which were resisting change and tended towards inflexibility, were causing some problems. These have been more marked on brownfield sites, where there are more time-served employees, higher levels of unionisation, traditions are strong, and there may be more 'fear' of change.
- Varying capabilities and aptitudes among the existing processing workforce affect the broad direction of change. This is generally because they influence how easily new skills and tasks can actually be taken up. As a result, employers may only be able to train employees, and apply the changes they want, selectively.
- Some employers were finding more difficulties locating individuals with good basic skills (ie literacy and numeracy) from the surrounding labour markets. This was despite higher levels of unemployment in some areas. Slack labour markets were simply increasing the number of applications and time spent sifting through them and not necessarily the quality. This was creating some recruitment difficulties.
- With the demand for higher level skills from process operatives, some employers have identified the increasing need for young people in education to develop skills relevant to the industry around them. It is important that education providers understand the needs of business to ensure that the training they provide is compatible with those needs. Education business links have been used to attempt to close the loop between industry and education. However, there is concern that young people are still not adequately prepared for many of the new sorts of processing jobs available, without a considerable investment from employers. This can again create recruitment difficulties and

has implications for the development of skills among the processing workforce.

These factors may slow down the rate of change in processing work and create more challenges which impede management attempts to modify and develop working practices.

7.3.2 The degree of technological change

Technology is known to drive a variety of changes in working practices, job design and organisational structures. Indeed, job changes generally follow technological changes. Variations in the frequency at which organisations review and update their equipment and technology, therefore, will have variable effects on both the rate and nature of changes in processing work.

Whilst technological advancement in terms of research and development over recent years has been quite rapid, not all processing organisations have been able, or have wanted, to keep up with every technological change. Indeed, many processing employers in this study have only modified their processes periodically and incrementally, and not always tried to introduce the most sophisticated equipment. This has especially been the case in some areas of food and drink processing, where the benefits have not been seen to outweigh the costs. Variations in the degree of technological advancement have thus given rise to variable degrees of change in the nature of processing work across the processing industry.

In this study, where employers have invested heavily in new technology, and technological developments have been more advanced, processing work has followed a similar pattern. Thus, the extent of change within the job has also been more marked. This suggests that employers with fewer resources to invest in technology, and/or who do not feel the technological developments will provide enough of a benefit, are likely to be more traditional in their approaches to processing work.

7.3.3 The nature of training and development

This research has shown that many employers have been inspired to change some of the training they offer to process operatives. Much of this has been in response to changes in the nature of processing work, how it is undertaken and organised. Thus

developments in training have related to changes in technology and ways of working. Many organisations have linked the future success of their business to future investment in training. Staying ahead in training matters, and developing a skilled and competent workforce which can maintain their reputation, competitive advantage, and health and safety record, is seen as pivotal.

However, in this study, training and development initiatives have not been universally applied. There is some variation in the extent to which training practices are being reviewed across the industries, and the sorts of training actually being adopted. This will undoubtedly have implications for the development of processing work more generally.

This study has shown that in those organisations where changes in processing work have been more advanced, there has also been a heavy investment in training and development. Employers have thought this essential to ensure workers can be both prepared for, and more able to adapt to, the changes taking place. As a result, they can more effectively develop the array of skills, attitudes and qualities required. This implies that where this sort of investment is lacking, or more limited, process workers will have less support, in training and development terms, to cope with the changes they are facing. Where skill gaps are apparent, employers are likely to experience greater management difficulties, and employee resistance to change will probably be more apparent. In these cases, changes within the job will undoubtedly be slower and less marked.

7.3.4 Creating effective 'change managers'

With the growing emphasis in organisations on modifying business and management practices, and identifying factors that can enhance business success, this has tended to place increasing importance on individual managers (*eg* Storey, 1994; Doyle, 1997). These have not only had to become more flexible, proactive and innovative in various aspects of technical, operational, resource and general business management, but in relation to people management skills as well. Internal changes in the organisation of people management have resulted in devolved personnel accountabilities to the line. Front line managers and supervisors have played an increasingly important role in the management of organisational change, especially in areas such as recruitment,

training and development as well as general management. They have had the responsibility of managing the processing workforce through the change process, and by so doing, to achieve overall organisational objectives regarding issues of flexibility and skill requirements.

However, there is evidence from this study, and more widely, that some managers have not been adequately prepared for this challenge (*eg* Storey, 1994; Doyle, 1997). Indeed, until the late 1980s there was very little attempt on the part of British employers more generally to ensure managers were equipped with the necessary skills and expertise. As a consequence, management development, training and education lagged behind many other countries, and managers were considered to lack some essential competences (see, for example, Handy, 1987). Whilst this situation is changing with the advent of development programmes such as the Management Charter Initiative, this study suggests that there is still some way to go. Some processing employers, in particular, are encountering problems among their managers. These include skills gaps and attitudinal resistance to change, and scepticism about new working practices. This is especially so where traditions are strong, and management teams with long service records fear change. Whilst this was not explicitly explored within this study, the literature suggests this situation may be aggravated where:

- there have been frequent attempts to change management practices in the past, and this has been done in a piecemeal, unplanned and *ad hoc* fashion
- managers have not been supported with adequate training, support and development systems.

As these managers play such a key role in managing and developing process workers, employers are eager to overcome these difficulties. After all, it is unlikely employers will gain the commitment of process workers to change if managers themselves are not committed. Some employers are attempting to override management skills gaps and to enhance management competence and commitment, by focusing on their management development systems. These can then be provided alongside the training processes for other workers (*eg* process workers). However, the situation is not always easily or quickly resolved. This may therefore be another factor which is inhibiting certain employers in their attempts to develop and modify the nature of processing work.

7.3.5 Restructuring process 'careers'?

Changes in the level and range of skills of process workers have arguably led to developments within the recruitment and selection processes, and the nature of the selection criteria. Indeed, there are some signs that techniques are becoming more sophisticated with the use of testing and more closely specified minimum skill requirements. More able and highly skilled recruits are also being sought through schemes such as Modern Apprenticeship programmes.

However, there has been concern among some employers that there may be personal development problems for these more highly skilled individuals in some cases. This is especially where:

- organisations have downsized, and processing career structures are flatter, leaving fewer positions to develop into
- less emphasis has been placed on training and enhancing employees' skills and responsibilities. This may reflect a lack of finances or inclination on the part of the employer.

This situation may be exaggerated by the fact that not all areas of processing work have traditionally been very highly skilled. Where developments within processing work have been limited (*eg* due to restrictive technological or training developments), many jobs may remain at a lower skill level. This will further limit opportunities for the more able individuals to develop, may create staff retention problems and affect the future morale and skills of the workforce. Under these circumstances, it is clear employers have restructured and not achieved the right balance between the newly skilled individual process operative, and the number and range of work opportunities.

It is vital therefore that both the range of jobs and the person develop at the same rate. Employers clearly have to plan their staffing needs carefully. It is important to ensure that they not only achieve the right skill balance among their workforce but provide opportunities for training and development for those who want it. However, this is not necessarily easy to achieve in practice. These factors therefore may also be working to impede the management of change.

7.3.6 The drive for flexibility and change

In the light of many changes in the nature of processing work, there have been increasing moves towards more flexible forms of working and 'multiskilling'. Essentially, these have required process workers to be more flexible about the sorts of work they undertake, compared to the past. However, the whole issue of flexibility has identified another area where employers have encountered management problems. This has related to the way changes and 'new' management practices, associated with things such as flexibility and broader processes of 'cultural change', have been articulated and managed.

In reality, flexibility has often meant different things in different organisations, and a variety of approaches have been identified during this study. Sometimes there is variety within the same organisation. For instance, some employers have intended to train up all process operatives in all areas of new skill. Others have selectively applied skill training and have intended, instead, to spread skills around, by matching people with certain aptitudes to certain work areas. Others have been taking more limited steps towards multiskilling their workforce, or have not been taking steps at all. Some have focused moves to flexibility at an individual level. Others still have focused on developing the joint skills of a group or team. Furthermore, whilst in some cases flexibility has involved process workers taking up new work in areas such as engineering and quality control, in others it has simply meant working on multiple processing tasks and/or machines, rather than just one.

The problem with this extent of variation in approach is that it often means organisations do not have a clear strategy for change. Thus, they are continually modifying their goals regarding flexibility in an *ad hoc*, trial and error fashion, and as one approach fails they replace it with another. For instance, they may move from an individually focused scheme to a team emphasis when one system appears unsatisfactory. The problem in turn with this is that over time, managers and employees alike are likely to be more sceptical and perhaps less committed to change. As such, attitudinal resistance among staff can become a hindrance to processes of organisational change. Not only may the employees dislike the message and perhaps the direction of change, but the fact that the message keeps changing. New programmes as a consequence may be viewed as the latest 'fad

or fashion' and quickly lose momentum. This is again more likely on brownfield sites, where employers have legacies of the past to override and deep workplace traditions. Where these problems are more marked, employers are likely to encounter more difficulties managing the change process and achieving the changes they want as quickly as they want.

7.4 Managing change?

Some employers are developing strategies to assist change and alleviate some of these aforementioned problems. This has usually been through a combination of organisational responses, such as:

cultural change programmes. These have sought to facilitate change by fostering new values such as empowerment, quality, flexibility, learning, self development and team-working. These need to be carefully designed and supported by a clear strategy, upheld by senior managers. Employees have also usually played a key part in such programmes especially team leaders and managers, who have been required to encourage and motivate staff over time. It has thus been essential to ensure the commitment of these employees is obtained. In some cases, restructuring processes have enabled those who have not wanted to comply to leave the organisation altogether.

modifications to the recruitment and selection process. These have intended to ensure new process workers have the necessary mix of ability, skills and personal qualities. This way they should be able to undertake the new work, and adapt to any future changes.

training and development programmes. These have been important to ensure that managers and employees alike are equipped with the necessary skills to adapt to change and their new responsibilities. With more employers looking to enhance the notion of the 'learning organisation', these programmes have also been important to ensure they are providing more development opportunities for those who want them.

It is not clear exactly how far many employers are from meeting their ultimate organisational objectives in terms of overriding

skills gaps and recruitment difficulties, achieving their skill requirements, and developing the nature of processing work. Indeed, this was not an intention of this study. It is suspected that the majority still have some way to go. However, employers would suggest that the above mentioned activities are essential on the path to achieving many of the objectives they espouse. This is especially in the light of any future business expansions, the need to increase recruitment and staffing levels, and/or any further technological and business developments.

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